



FTU
1976-77

FLORIDA TECHNOLOGICAL UNIVERSITY

Orlando, Florida 32816



PEGASUS was the winged horse of the muses in Greek Mythology. He carried their hopes, their aspirations, and their poetry into the skies. PEGASUS is as futuristic as tomorrow's space exploration in our solar system and into the universe beyond. The seal also bridges the gap between the humanities and space technology.

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ACCENT ON THE INDIVIDUAL and ON EXCELLENCE

Florida Technological University is an Equal Opportunity Employer, and assures equal access to educational programs and activity opportunities without regard to race, sex, age, or national origin.

TABLE OF CONTENTS

STATE OF FLORIDA BOARD OF EDUCATION	3
STATE OF FLORIDA BOARD OF REGENTS	3
ADMINISTRATION	4
WHERE TO GO FOR ANSWERS	6
ORLANDO AND VICINITY MAP	8
FTU CAMPUS MAP	9
ACADEMIC CALENDAR	11
STATEMENT OF PURPOSE AND PHILOSOPHY	16
THE FTU CAMPUS	16
RESIDENCE CENTERS	17
EAST CENTRAL FLORIDA AREA	16
ACCREDITATION	19
FTU FOUNDATION	19
STUDENT AFFAIRS	23
SCHEDULE OF FEES	33
ADMINISTRATIVE AND ACADEMIC POLICIES	35
GRADUATE STUDIES	58
ACADEMIC PROGRAMS	63
MAJOR IN GENERAL STUDIES	64
COLLEGE OF BUSINESS ADMINISTRATION	67
COLLEGE OF EDUCATION	81
COLLEGE OF ENGINEERING	104
COLLEGE OF HUMANITIES AND FINE ARTS	121
COLLEGE OF NATURAL SCIENCES	138
COLLEGE OF SOCIAL SCIENCES	169
CONTINUING EDUCATION	18, 38
COOPERATIVE EDUCATION	18
COURSE DESCRIPTIONS	194
FACULTY	327
INDEX	350

This public document was promulgated at an annual cost of \$37,287.60 or \$.93219 per copy to acquaint the student with the program of study and the cost of attending the university.

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Jimmie A. Ferrell, M.S., *Director of Student Organizations and Orientation*
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Kenneth D. Lawson, Ph.D., *Director of Village Center*
Paul R. McQuilkin, Ph.D., *Dean of Men*
Carol P. Wilson, M.B.A., *Dean of Women*
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Ken H. Renner, M.P.H., *Director of Intramurals and Recreation*
Edward W. Stoner, M.D., *Director of Student Health Service*
David A. Tucker, Ph.D., *Director of Developmental Center*



WHERE TO GO FOR ANSWERS

AD — Administration Building

LR — Library Building

VC — Village Center

RH — Residence Hall

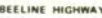
questions regarding	place to call	phone	office location
Academic Matters	Academic Advisor		
Academic Status	Registrar	2531	AD 165
Admission, Graduate or Undergraduate	Admissions	2511	AD 165
Add, Drop, or Change Courses	Registrar	2531	AD 165
Books, Supplies, and Sundry Items	Bookstore	2500	LIB B-3
Borrowing Books from another Library	Library	2561	LIB 4th floor
Cashing a Check	Cashier	2881	AD 108 & 109
Checking out Books	Library	2580	LIB 1st floor Desk
Checking out Phonograph Records	Library	2571 2580	LIB 4th floor
CLEP Credits	Academic Advisor		
Clubs & Organizations	Director for Student Organizations	2766	V.C. 134
Cooperative Education	COOP Office	2314	AD 118
Credit by Exam	Dean of Appropriate College		
Dead Auto Battery	University Police	2421	Bld. 17
Equipment Checkout	P.E. & VC Game Room	2391 2312 2766	P.E. 101 V.C. 185 V.C. 201
Extracurricular Programs			
Extramurals	Extramural Office	2136	V.C. 139
Family Planning	Student Health Office	2701	V.C.
Graduation:			
Application	Registrar	2531	AD 165
Fees	Cashier	2881	AD 108, 109
Cap & Gown	Bookstore	2500	LIB B-3
Positions	Placement Office	2361	AD 225
Course Checkout	Student Advisor		
Health Insurance	Student Health Serv.	2701	V.C.
Help with Reading, Speech, and Hearing	Developmental Center	2811	RH-C 116
Housing	Housing Office	2831	V.C. Main Lobby
Illness	Student Health Serv.	2701	V.C.
Identification Cards	Registrar	2531	AD 165
Intramurals	Intramural Office	2408	V.C. 142
Junior College Relations	Academic Affairs	2231	AD 350
Loans, Scholarships, & Grants	Student Financial Aid	2827	AD 282
Lost and Found	Village Center	2611	Main Desk
Meeting Rooms	V.C. Director	2117	V.C. 198
Opportunities for Student Involvement	Student Government	2191	V.C. 206
Organizing a Club	Student Affairs		
	COORD. for Clubs	2766	V.C. 134
	Student Government	2191	V.C. 205
Orientation	Student Affairs	2766	V.C. 134
Paying University Bills	Cashier	2881	AD 108, 109
Personal Counseling	Developmental Center	2811	RH-C 116
Placement Center	Placement Office	2361	AD 225
Readmission following Withdrawal, Disqualification, or Exclusion	Admissions Office	2511	AD 165

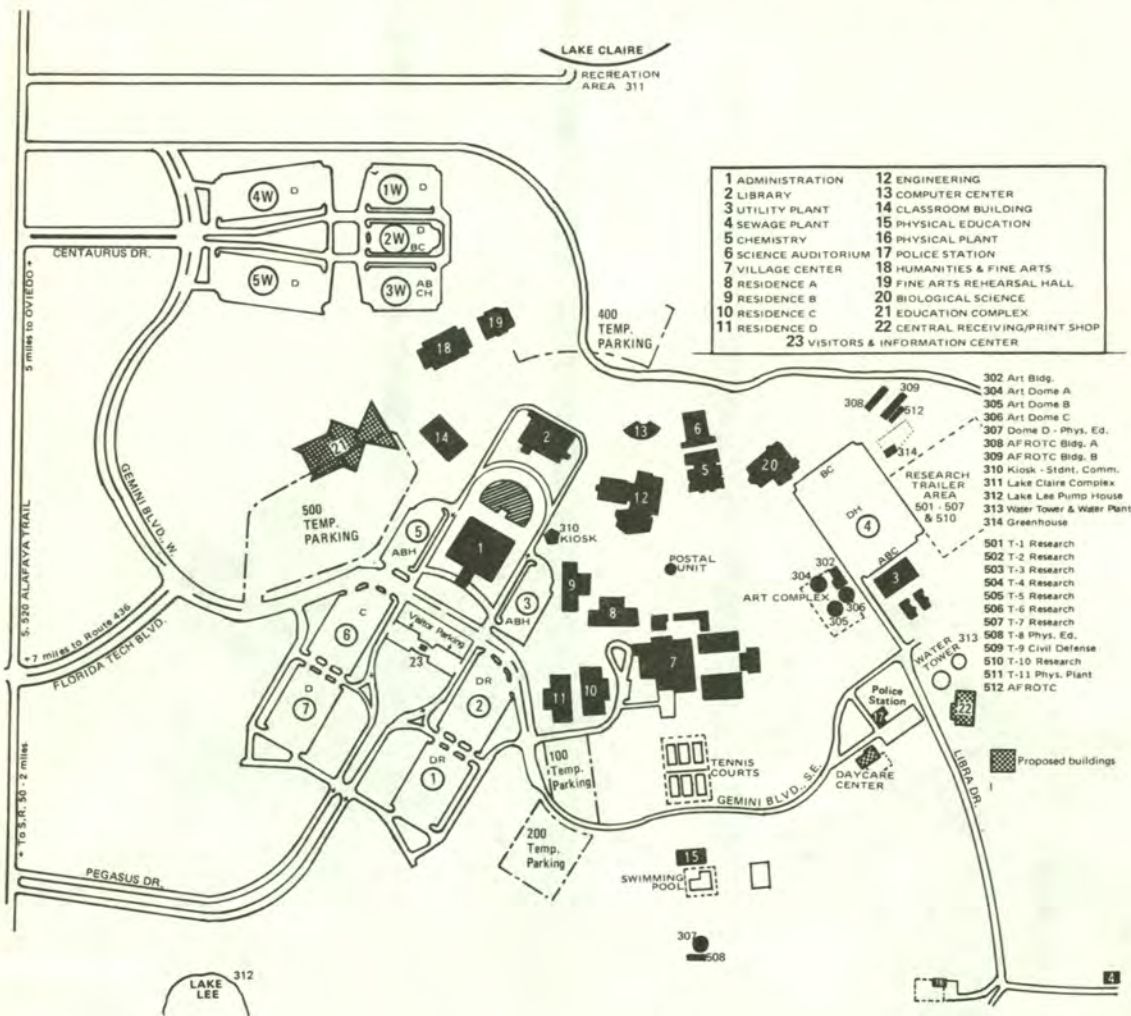
Recreation Programs			V.C. 139
Records and Transcripts	Registrar	2531	AD 165
Religious Services	Campus Ministry	273-0610	V.C. 133
Research Assistance	Library	2564	LIB 316
Resident Centers	Admissions	2511	AD 165
Spiritual Counseling	Campus Ministry	273-0610	V.C. 133
Student Employment	Student Financial Aid	2827	AD 282
Student Government	Student Government	2191	V.C. 206
Student Newspaper	Publications	2606	LIB 215
(FUTURE)			
Test Scores (Admission)	Academic Advisor or Developmental Center	2511	RH-C 116
Tickets (Movie subsidy)	Student Government	2191	V.C. 206
Traffic Violations	University Police	2421	Univ. Police Dept.
Transfer Credits	Admission Officer	2511	AD 165
Travel & Carpool Information	Student Government	2191	V.C. 208
University Regulations	Student Affairs	2821	AD 282
Vehicle Registration	University Police	2421	Uni. Police Dept.
Vocational Counseling	Developmental Center	2811	RH-C 116
Veteran Counseling	Veteran Affairs	2139	AD 278
Withdrawing from a Course or from the University	Registrar	2531	AD 165

When you Cannot find an Answer:

Student Government	2191	V.C. 206	Dean of Men	2751	AD 277
Public Information	2504	AD 395-F	Dean of Women	2824	AD 279

INTERSTATE 4
FROM JACKSONVILLE
AND DAYTONA







ACADEMIC CALENDAR

Summer Quarter 1976

MAY 20	Last day for receipt of regular undergraduate and graduate applications
JUNE 3	Last day for receipt of readmission applications
JUNE 12	Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date
JUNE 14-17	Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised
JUNE 17	*Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.
JUNE 21	Classes begin for Summer Quarter
JUNE 24	Last day to adjust class schedule (end of Add/Drop) Last day for late registration (late registration runs concurrently with Add/Drop). A \$25 late fee will be assessed.
JUNE 24	Last day for withdrawal with refund
JUNE 24	Last day to apply for graduation for Summer Quarter
JULY 5	Independence Day holiday
JULY 6	Classes resume
JULY 16	Deadline for withdrawal without grade penalty
JULY 16	Last day for removing temporary student status
AUGUST 13	Last day to withdraw from a course or from the University
AUGUST 13	Last day to change from credit to audit, if passing
AUGUST 26	Last day to remove an "I" earned last quarter
AUGUST 26	Classes end for Summer Quarter. Final exam given at discretion of instructor
AUGUST 26	Commencement
AUGUST 31	Grades due in Registrar's Office
	*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

MAY 76						
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JUNE 76						
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JULY 76						
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AUG 76						
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29	30	31				

Fall Quarter 1976

AUGUST 16

Last day for receipt of **regular** undergraduate and graduate applications

AUGUST 30

Last day for receipt of readmission applications

SEPTEMBER 13

Academic year begins

SEPTEMBER 13-16

Orientation and advisement for new freshmen and transfer students not pre-advised

SEPTEMBER 13-16

Advisement of current and former students not pre-advised

SEPTEMBER 13-16

*Registration by appointment for the following student classifications: Graduate, current undergraduate, former undergraduate, new undergraduate, post-baccalaureate and faculty and staff will register following the above appointments. Registration will close after the last appointment

SEPTEMBER 20

Classes begin for Fall Quarter

SEPTEMBER 24

Last day to adjust class schedule (end of Add/Drop)

SEPTEMBER 24

Last day for late registration (late registration runs concurrently with Add/Drop). A \$25 late fee will be assessed.

SEPTEMBER 24

Last day for withdrawal with refund

SEPTEMBER 24

Last day to apply for graduation for Fall Quarter

OCTOBER 15

Deadline for withdrawal without grade penalty

OCTOBER 15

Last day for removing temporary student status

OCTOBER 16

Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

NOVEMBER 19

Last day to withdraw from a course or from the University

NOVEMBER 19

Last day to change from credit to audit, if passing

NOVEMBER 25-26

Thanksgiving Holidays (University-wide)

NOVEMBER 29

Classes resume

DECEMBER 3

Classes end for Fall Quarter

DECEMBER 3

Last day to remove an "I" earned last quarter

DECEMBER 6-9

Final examination period

DECEMBER 10

Commencement

DECEMBER 11

Graduate record exam (at designated examination Centers) Registration for examination must be made 4 weeks prior to this date

DECEMBER 11

Grades due in Registrar's Office

DECEMBER 13

Christmas holidays begin (students)

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

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Winter Quarter 1977

NOVEMBER 29	Last day for receipt of regular undergraduate and graduate applications
DECEMBER 13	Last day for receipt of readmission applications
JANUARY 3	Orientation and advisement for new freshmen and transfer students not pre-advised
JANUARY 3	Advisement of current and former students not pre-advised
JANUARY 4	*Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.
JANUARY 6	Classes begin for Winter Quarter
JANUARY 11	Last day to adjust class schedule (end of Add/Drop)
JANUARY 11	Last day for late registration (late registration runs concurrently with Add/Drop). A \$25 late fee will be assessed.
JANUARY 11	Last day for withdrawal with refund
JANUARY 11	Last day to apply for graduation for Winter Quarter
JANUARY 15	Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date
FEBRUARY 1	Deadline for withdrawal without grade penalty
FEBRUARY 1	Last day for removing temporary student status
FEBRUARY 25	Last day to withdraw from a course or from the University
FEBRUARY 25	Last day to change from credit to audit, if passing
FEBRUARY 26	Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date
MARCH 11	Classes end for Winter Quarter
MARCH 11	Last day to remove an "I" earned last quarter
MARCH 14-17	Final examination period
MARCH 18	Commencement
MARCH 19	Grades due in Registrar's Office

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

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Spring Quarter 1977

FEBRUARY 21

MARCH 7

MARCH 21-24

MARCH 24

MARCH 28

APRIL 1

APRIL 1

APRIL 1

APRIL 1

APRIL 22

APRIL 22

APRIL 23

MAY 20

MAY 20

MAY 30

MAY 31

JUNE 3

JUNE 3

JUNE 6-9

JUNE 10

JUNE 11

JUNE 11

Last day for receipt of **regular** undergraduate and graduate applications

Last day for receipt of readmission applications

Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised

*Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.

Classes begin for Spring Quarter

Last day to adjust class schedule (end of Add/Drop)

Last day for late registration (late registration runs concurrently with Add/Drop). A \$25 late fee will be assessed.

Last day for withdrawal with refund

Last day to apply for graduation for Spring Quarter

Deadline for withdrawal without grade penalty

Last day for removing temporary student status

Graduate record exam (at designated examination Centers). Registration for examination must be made 4 weeks prior to this date

Last day to withdraw from a course or from the University

Last day to change from credit to audit, if passing Memorial Day holiday

Classes resume

Classes end for Spring Quarter

Last day to remove an "I" earned last quarter

Final examination period

Commencement

Grades due in Registrar's Office

Academic year ends

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS.

MAR 77

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JUNE 77

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28	29	30			

Last day for receipt of **regular** undergraduate and graduate applications
 Last day for receipt of readmission applications
 Graduate record exam (at designated examination Centers) Registration for examination must be made 4 weeks prior to this date
 Orientation and advisement for new freshmen and transfer students, and advisement for former and current students not pre-advised
 *Registration by appointment for new and re-admitted graduate, post-baccalaureate, undergraduate students. Student registration will close following the last appointment. Faculty and staff will register following the above appointment.
 Classes begin for Summer Quarter
 Last day to adjust class schedule (end of Add/Drop)
 Last day for late registration (late registration runs concurrently with Add/Drop). A \$25 late fee will be assessed.
 Last day for withdrawal with refund
 Last day to apply for graduation for Summer Quarter
 Independence Day holiday
 Classes resume
 Deadline for withdrawal without grade penalty
 Last day for removing temporary student status
 Student advisement for Fall Quarter
 Last day to withdraw from a course or from the University
 Last day to change from credit to audit, if passing
 Classes end for Summer Quarter. Final exam given at discretion of instructor
 Commencement
 Last day to remove an "I" earned last quarter
 Grades due in Registrar's Office

*Resident Center Registration and Add/Drop dates precede registration and vary with individual centers. RESIDENT CENTER STUDENTS MUST CONTACT DIRECTORS OF THEIR CENTERS FOR ADVISEMENT AND REGISTRATION INSTRUCTIONS

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FLORIDA TECHNOLOGICAL UNIVERSITY

STATEMENT OF PURPOSE

Florida Technological University serves the people of Florida by providing undergraduate and graduate education in all general areas of study and in specifically selected technological and professional disciplines.

Baccalaureate degree programs are offered in business administration, education, engineering, general studies, humanities and fine arts, natural sciences, and social sciences. Master's degree programs are offered in each of the six colleges of the University. A Doctoral program is available in education through an agreement with Florida Atlantic University and in engineering through an agreement with the University of Florida.

In addition to offering a broad academic program, FTU serves as a center for research and service in east central Florida.

INSTITUTIONAL PHILOSOPHY

Florida Technological University's philosophy is based upon two tenets: **ACCENT ON THE INDIVIDUAL** and **ACCENT ON EXCELLENCE**. The University believes in the individual worth of each person and especially encourages the **RESPONSIBLE INDIVIDUAL** who strives for **EXCELLENCE** in every activity.

Research is considered an important part of advanced study and FTU provides students with opportunities for research projects and independent study. Many projects involve community service and opportunities for students to experience real situations while receiving individual guidance from faculty.

Florida Technological University, in order to serve the community better, makes higher education easily available to the citizens of east-central Florida by operating off campus resident centers and by offering continuing education and special courses and conferences to the citizens of the area.

EAST CENTRAL FLORIDA AREA

FTU is located in the East Central Florida region with a population estimated at 1.3 million. The area is well endowed with a rich heritage of cultural, educational, industrial, and recreational activities. Cultural activities include a symphony orchestra, civic theatre, dinner theatres, art galleries, and museums. The beauty of the Orlando area is evidenced through its numerous parks and flower gardens. In addition to FTU, educational needs of the area are served through quality public school systems, public junior colleges, and several privately supported colleges and schools. Recreational opportunities abound in the Orlando area.

THE CAMPUS

The campus of FTU, located 13 miles east of downtown Orlando, consists of 1227 acres of land; much of which is covered with pine, palm, cypress, cedar, and oak trees. Lake Claire, covering 40 acres and Lake Lee, covering 14 acres, contribute to the natural beauty

of the campus. Since campus construction began in 1966, approximately \$32 million has been invested in facilities and equipment including the library, classroom buildings, laboratories, residence halls, and student facilities. The childcare center was built with funds contributed through the Edyth Bush Charitable Foundation of Winter Park and FTU Student Government. Recreational facilities include lighted tennis and handball courts, a flag football-soccer field, a swimming pool, a golf driving range with putting greens, volleyball courts, and a baseball field. The campus currently serves approximately 10,000 students and growth and progress continue with the construction of an Education Building and Gymnasium.



FTU's four two-story residence halls accommodate 414 students—198 men and 216 women. Two of the residence halls are for women and two are for men. Each suite consists of double bedrooms (a limited number of singles), common living room and bath. Each suite is equipped with functional furnishings, in keeping with the living-study area design, central, heat, air-conditioning and maid service. Each hall has laundry facilities, a vending machine room and a common social/study lounge for residents' use. For more detailed information on campus housing please write to Director of Housing, Florida Technological University, P.O. Box 25,000, Orlando, Florida 32816

RESIDENT CENTERS

Florida Technological University offers a number of *upper division* and *graduate level* courses at four off-campus Resident Center locations in Central Florida. These are the same courses as are offered on campus and carry the same credit as on-campus courses. Each center is staffed with a Center Director and full-time faculty. Contact the Resident Centers for information as to the current course and program offerings.

FTU BREVARD RESIDENT CENTER

1519 Clearlake Road
Cocoa, Florida 32922
(305) 632-4127

FTU DAYTONA BEACH RESIDENT CENTER

215 South Clyde Morris Boulevard
Daytona Beach, Florida 32014
(904) 255-7423

FTU SOUTH ORLANDO RESIDENT CENTER

7300 Lake Ellenor Drive
Orlando, Florida 32809
(305) 855-0881

CONTINUING EDUCATION AND NONCREDIT ACTIVITIES

These courses are offered for individuals who are not within reasonable commuting distance of the University. Most of the students taking credit courses are employed full-time with business, industry, government, and the teaching profession. Off-campus credit courses are generally taught by the University's regular faculty. In certain instances, highly qualified persons from other educational institutions, as well as from business and industry, provide the instruction. Courses and/or programs are offered by outside requests primarily, although some are scheduled as needs are identified by the University.

The University is offering an increased number of conferences, institutes, seminars, workshops and short courses which do not carry University credit. These programs, which can be scheduled both on and off the main campus, are developed to meet the educational needs of business, professional, government, service, civic and other groups. Lecturers and discussion leaders come from the faculties of FTU and other educational institutions in addition to highly qualified individuals in various professional areas.

Further information about Florida Technological University's Continuing Education programs and noncredit activities may be obtained by writing to the Office of Continuing Education and Conferences, ADM 395-O, Florida Technological University, Post Office Box 25000, Orlando, Florida 32816.

COOPERATIVE EDUCATION

Co-Op is a planned, balanced, education program for students who wish to "blend theory with practice" by combining their campus education with work experience.

The Co-Op Program is based on a format under which the student ordinarily alternates between quarters of study and quarters of employment. The student will be placed with business, industry, or a governmental agency in a work training assignment related to his/her academic field of study.

For further information about the Cooperative Education Program, write to Cooperative Education Office, Florida Technological University, Post Office Box 25000, Orlando, Florida 32816, or visit Suite 118 in the Administration Building.



ACCREDITATION

The graduate and undergraduate programs of the University are accredited by the Southern Association of Colleges and Schools, the official regional accrediting agency for educational institutions in the South.

In addition to the regional accreditation agencies, there are a number of scientific, professional, and academic bodies conferring accreditation in specific disciplines and groups of disciplines. Currently, the following areas have been approved by the agencies indicated: The College of Business Administration is accredited by the American Association of Collegiate Schools of Business (AACSB); Engineering Mathematics and Computer Systems, Environmental, Electrical, Industrial, and Mechanical program options in the College of Engineering by the Engineer's Council for Professional Engineers Development (ECPD); Medical Record Administration by the Council on Medical Education of the AMA; Respiratory Therapy by the American Registry of Inhalation Therapists (ARIT). All teacher education programs are fully accredited by the Florida State Department of Education.

FTU is listed in Report of Credit Given By Educational Institutions with an "A" Rating which means "Transcript of record given full value." This handbook, published by the American Association of College Registrars and Admission Officers, shows the acceptability of transfer credits based upon their (AACRAO) evaluation.

FLORIDA TECHNOLOGICAL UNIVERSITY FOUNDATION, INC.

Chartered in 1968, the FTU Foundation, Inc. is a non-profit, tax-exempt corporation receiving and disbursing private gifts for the betterment of the University as a whole. Its primary function is that of assisting the University financially in the student financial aid program, scholarships, and in institutional development.

Through the leadership of a 36-member Board of Directors, the Foundation encourages, solicits, receives, and administers gifts and bequests of property and funds for scientific, educational and charitable purposes. All for the advancement of Florida Technological University and its objectives.

The Foundation promotes and supports education by providing funds which are not received from public sources.

Contributions are deductible by donors as provided in Section 170 of the Internal Revenue Code.

UNIVERSITY LIBRARIES

Director: *Lynn W. Walker*, LR 427, Phone, 275-2564

Central to the educational programs at FTU are its libraries. They are designed to provide materials and services to support the instructional and research needs of the university. By providing a wide range of resources and materials at the undergraduate, graduate and research levels, the library helps the student to develop the habit of self-education, supports in depth the teaching program in the subject areas, and aids the individual faculty and research programs of the University.



GENERAL INFORMATION

The library is the focal point of academic activity on campus and all books are placed on open shelves to encourage browsing. The collection now numbers more than 200,000 volumes and is growing at the rate of 20,000 to 25,000 volumes annually. About 4,000 periodical, newspaper and serial publications are received regularly. The FTU Library is unique among American universities in offering not only a variety of newspapers, periodicals and educational research documents on microform, but also a complete catalog of its book collection on microfiche. Small libraries are maintained at the Resident Centers in Cocoa, Daytona Beach, and South Orlando.

The first floor of the Library Building contains an exhibit area, the circulation desk and the Instructional Media Center. The Reference collection, state and federal documents, and interlibrary loan are located on the second floor. On the third floor are found periodicals, microforms, reserve material, and the Technical Services division. The fourth floor contains the general book collection, special collections, administrative offices, and noise room with typewriters for student use. Study areas and photocopying machines for student and faculty use are located on all floors. During the school term the library operates on a full schedule of hours, including evenings and weekends. During vacation periods, a shortened schedule is maintained.

READERS SERVICES

Assistant Director: *Bernard L. Foy, LR 312, Phone, 275-2485*

Professional Staff: *Leonie Y. Black, Elba C. Grovdahl, Phyllis J. Hudson, Elizabeth W. Lloyd, Norbert St. Clair, June S. Stillman*

The Readers Services division of the Library is responsible for the circulation of books and materials, development and maintenance of the special collections, and reference services. Competent professional librarians are available at all times in the Reference Department to provide assistance and advice in the use of the library, its materials and services, and instruction in its use. Interlibrary loan service is available to administration, staff, faculty, graduate and undergraduate students.

In an effort to have library services within reach of all its students, the FTU library maintains small collections of about 2,000 books at each of the university's three resident centers, located in Cocoa, Daytona Beach and South Orlando. Subjects of the collections vary depending on the courses offered at each center.

Special services are provided for the handicapped. The microfiche catalog is made available to mobility-impaired students attending FTU and these students may check out microfiche readers for home use. Using the microfiche catalog, students can determine the books they need, and a call to the library will bring books to them at a convenient location on campus. The Florida Bureau of Blind Services has deposited talking book machines and cassette tape players in the library for the use of blind or partially-sighted students, and the library staff assists these students in reference and research projects.

TECHNICAL SERVICES

Assistant Director: *John C. Sanderlin*, LR 427, Phone, 275-2564

Professional Staff: *Karen A. Hitchcock-Mort, Mary Helen Moritz, Peter C. Rossi*

The Technical Services division is in charge of the acquisition, cataloging and processing of all materials in the collection, and maintaining the card catalog. The FTU Library is a charter member of the Southeastern Library Network (SOLINET), which links some 100 libraries in the Southeast via telephone lines and interactive terminals, to a massive data base at the Ohio College Library Center (OCLC) in Columbus, Ohio. Through SOLINET, the FTU Library has access to the collections of all major libraries in the Southeast, as well as other regions which are serviced by OCLC—a total of some 600. When a library catalogs a book, the cataloging information is entered in the computer data base. When another library catalogs the same book, the cataloging information already entered by the previous library can be displayed on a terminal, and catalog cards printed automatically. The network also will show holdings for each of the libraries, making interlibrary loan between the libraries faster and more efficient, and also making it possible to avoid unnecessary duplication.

INSTRUCTIONAL MEDIA CENTER

Director: *Tony M. Logan*, LR 139, Phone, 275-2571

Media Coordinator: *Dorothy M. Kannon*

The primary purpose of the Instructional Media Center is to improve instruction. In meeting both the academic and administrative needs of FTU, the Center provides audiovisual materials and equipment, as well as graphic and photographic services in an effort to bridge the gap between technology and instruction. A wide range of consultative services to aid students and faculty in the fullest possible utilization of its facilities and services is also available.

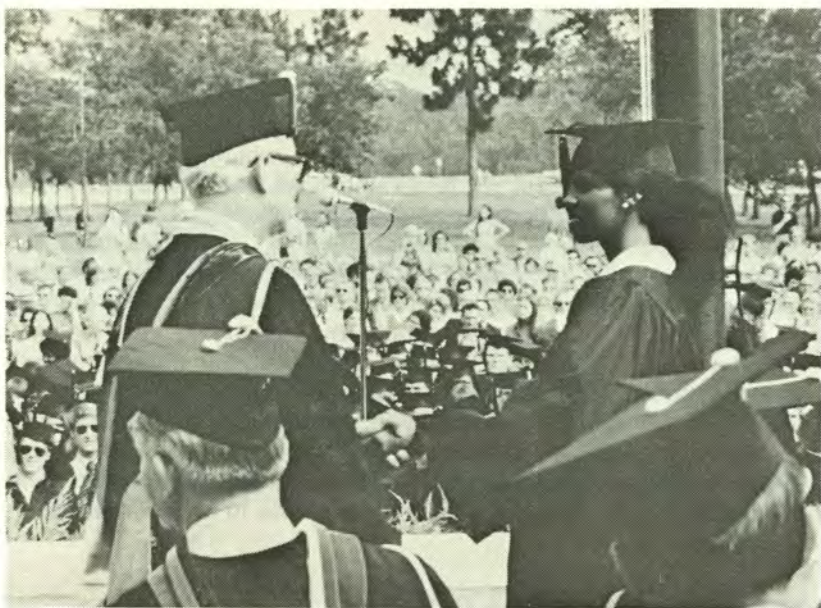
The Graphics area provides faculty members with the opportunity to have ideas and concepts visualized through the graphic artist's hands. The Photography area assists the faculty member in bringing a broader world into the classroom through the use of black and white and color photographs and slides. A professor, working in conjunction with the graphic designer and photographer has the opportunity to expand the learning experience for students by providing learning materials in the form of original art, photographs, slides, transparencies and other original instructional mediums.

The Campus Services section of Instructional Media is available to all students, faculty and staff who desire to use the media services available. A wide variety of audiovisual equipment, and a wealth of instructional materials such as films, audio tapes, records and filmstrips are available. In addition, a special room for previewing any of these audiovisual materials is available.

UNIVERSITY BOOKSTORE

The University Bookstore, located in the basement of the Library Building, carries required textbooks, supplemental books, and associated supplies for all FTU courses. In addition, a complete line of school and art supplies, sundries, paperbacks, gifts, and other items of interest are available. A Customer Service Desk is provided for special orders such as class rings.

During the last three days of each quarter, the Bookstore has a "buy-back" period for used text books. Student I.D. cards must be presented for identification.



STUDENT AFFAIRS

INTRODUCTION

The Vice President for Student Affairs is concerned with the education and welfare of students as affected by non-classroom aspects of the total University program; therefore, he coordinates and supervises the non-academic areas of student life. His goals include creating a favorable environment for student learning; personalizing the educative process; encouraging self-discipline, self-direction, and purpose on the part of the individual student; and fostering respect and brotherhood among students and faculty. Assisted by members of his staff, the Vice President for Student Affairs administers programs involving orientation, personal counseling, housing, financial aids, health services, placement, student government, student organizations, Veterans Affairs and special activities. Students are invited to consult the staff of Student Affairs concerning any aspect of campus life.

ORIENTATION

The purpose of orientation at Florida Technological University is to acquaint new entering and transfer students with the various colleges and academic curricula and to assist them in understanding college life. Orientation for the student begins upon the indicated desire to enroll at FTU. Each student receives a number of communications from members of the faculty and administration, and subsequently from the student body, containing advice on academic life, student services, and other campus activities. Information is mailed to students indicating the date on which they are to report for orientation. During orientation students meet members of the faculty and administration. They also receive instructional information to facilitate registration.

HOUSING POLICY

- I. Regularly enrolled single students paying registration fees for a minimum of nine quarter hours may apply for assignment to University residential units. Priority of assignment is given to current residents and new students admitted in good standing. Any single student applicant to the University may request and submit a Housing application on which he/she requests Housing and Food Service for a specific quarter. Priority of room assignments is based on the date of receipt of the completed application in the Housing Office. Applicants should CAREFULLY READ the application before submitting it with the \$25 pre-payment to the Housing Office.
- II. ALL HOUSING CONTRACTS ARE FOR HOUSING AND FOOD SERVICE, combining room and board, and requiring each resident student to participate in one (1) of several available meal plans.

INTERNATIONAL STUDENT SERVICES

The Division of Student Affairs offers basic services for students from other nations. These services include pre-arrival information, assistance in locating housing, counseling on personal, financial, and

cross-cultural communication matters, referral to appropriate University and community agencies for needed services, liaison with the Immigration and Naturalization Service, and other matters that occur from time to time. Contact the Student Affairs Office, Administration Building, 2nd floor, for further information.

STUDENT HEALTH SERVICE

The University is concerned with the physical and emotional health of the student as well as the promotion of individual and general health in the University community. A Student Health Service is maintained on an outpatient basis for routine and emergency health needs, to promote health education, and to protect the Student Body from communicable diseases. The Service is staffed by medical doctors and registered nurses when classes are in session. Medical care in the students' living quarters is not provided. Every health fee paying student is entitled to the benefits outlined in the Health Service brochure. Except for Workman's Compensation cases, faculty and staff will be seen only for emergency first aid on a fee for service basis.

Blood is available for students, staff, faculty and their immediate families by notifying the Student Health Services of such need.

Medical records are confidential communications and will be treated as such in so far as the law permits.

In the event of an on-campus emergency, contact University Police for assistance to the Student Health Service.

STUDENT FINANCIAL AID

PURPOSE

Florida Technological University subscribes to the principle that the purpose of financial aid is to provide assistance to students who, for lack of funds, would otherwise be unable to attend college. Financial aid is awarded according to each individual's need in relation to college costs. Awards may come from one or any combination of the following: scholarships, grants, loans, and part-time employment. Our financial aid staff is dedicated to the principle that each student should receive personal attention with complete confidentiality. Every effort is made to provide financial counseling by experienced, considerate personnel.

APPLICATION

Each student desiring to receive student financial assistance must annually submit a separate Florida Technological University Student Financial Aid Application. For information or an application, please contact Florida Technological University's Student Financial Aid Office or your counselor's office if attending school in Florida. For your application to be considered on time, you must submit it between December 15 and May 1 for the academic year beginning the following September. All applications received after May 1 will be accepted conditionally. In addition to the FTU application, parents or guardians or the independent student must complete a financial statement. Upon completion, this statement should be mailed directly to the College Scholarship Service or the American College Testing Service. *The fact that a student is married does not preclude parental support.* These forms may be obtained from your high school or junior college counselor or from this office. Receipts of an award

does not automatically renew an application for subsequent years. Consideration for assistance is based on availability of funds and the parents' or student's financial condition. The amount of available funds from federal, state, and local sources is not always known, therefore, some awards are extended on a tentative basis initially. If you receive assistance from sources other than the Student Financial Aid Office, your award may be adjusted. Applicants who fail to notify this office of assistance from other sources are subject to complete withdrawal of aid.



ESTIMATED 1976-77 STUDENT BUDGETS

	Resident (9 mo)	Commuter (9 mo)	Self- Support (12 mo)	**Married (12 mo)	**Single/ Dependents (12 mo)
*Tuition/Fees (15 hr./qtr.)	\$ 700	\$ 700	\$1133	\$1133	\$1133
Books	180	180	240	240	240
Housing	615	195	1177	2150	2150
Food	738	530	794	1560	900
Transportation	217	400	534	1200	534
Personal	350	270	467	688	688
Other	0	0	0	0	750
	\$2800	\$2275	\$4345	\$6971	\$6345

* Upper level students, add \$23/quarter

OUT-OF-STATE FEES: additional \$37 per credit hour for lower level courses, \$47 per credit hour for upper level courses

** Each additional dependent: \$750

FINANCIAL ASSISTANCE PROGRAMS

Available at Florida Technological University

LOANS

FEDERALLY INSURED STUDENT LOAN PROGRAM (GUARANTEED STUDENT LOAN PROGRAM): This federally sponsored program provides insurance for long-term, low interest loans made by authorized lenders such as banks, savings and loan associations, credit unions, pension funds and insurance companies. The maximum loan available for undergraduate or vocational students is \$2000 per academic year or \$7500 during the undergraduate studies and \$10,000 for graduate studies. Any student whose adjusted family income is less than \$15,000 will automatically qualify for federal interest benefits. However, the maximum loan may never exceed the cost of education less other financial aid received. For students eligible for interest benefits, the federal government will pay to the lender the total interest due prior to the beginning of the repayment period. Applications for this loan may be obtained from the Student Financial Aid Office.

FLORIDA INSURED STUDENT LOAN PROGRAM: This combined State of Florida, federal government program provides long-term, insured loans to students who have made application through the Student Financial Aid Office and have adjusted family incomes of less than \$15,000. The maximum amount of a loan for an academic year is \$2000. Applicants must be U.S. citizens and must have been bona fide residents of Florida for one year. Students must be admitted to FTU in good standing and must maintain normal progress.

LAW ENFORCEMENT EDUCATIONAL LOAN PROGRAM: Applicants who are full-time in-service law enforcement officers and who are majoring in Criminal Justice, may apply for these long-term loans which carry a 7% simple interest rate per annum which are repayable over a maximum of a 10 year period. Service as a full-time officer or employment with a public funded law enforcement agency will cancel the principal amount of the loan plus interest at the rate of 25% per annum for each completed year of employment in law enforcement. The student must complete the following application forms available from the Financial Aid Office: Faculty-advisor interview certification, FTU application for financial aid, and the LEEP 3 student note.

NATIONAL DIRECT STUDENT LOAN PROGRAM: This provides a long-term, low interest (3% simple interest) program of loans to students admitted to the university who show proven financial need and remain in good standing. All recipients of this loan are required to arrange an exit interview with the University Student Loan Officer during their last quarter at the University. Payment of these funds begins twelve months after attending classes for at least half time study, and may extend over a ten year period. Assignment in the Armed Service, Peace Corps or Vista lasting up to three years, allows deferment for repayment of principal and interest.

STUDENTS REGENT FEE LOAN: This long-term, low interest (3% simple interest) loan, authorized by the Board of Regents, utilizes student fees and is administered by the Financial Aid Office. Students who have a proven financial need are eligible to apply for these funds. Repayment must begin six months after the borrower graduates or ceases to be a full-time student.

GENERAL STUDENT AID LOAN: This short-term loan (1 to 6 months) provides assistance to students who have an interim financial aid problem (i.e. Florida Insured Student Loan application in process or V.A. claim problems). Payment is to be made on the due date as stated on the loan contract.

SCHOLARSHIPS

There are basically four categories of scholarships which are processed through the Student Financial Aid Office:

COLLEGE AWARDED SCHOLARSHIPS: The individual colleges assign funds to enrolled students according to GPA or contribution to the college. Application should be made through the department and/or dean.

CONCURRENTLY AWARDED SCHOLARSHIPS: These require a student to have financial need and to be enrolled in a specific study area. Application may be made through Student Financial Aid, however, the final choice is usually made by the donor.

STUDENT FINANCIAL AID AWARDED SCHOLARSHIPS: These funds are assigned to Student Financial Aid for awarding on a general basis to students with a proven financial need. Application requires either a Parent's Confidential Statement or a Student Financial Statement.

AGENCY AWARDED OR INSTITUTIONALLY AWARDED SCHOLARSHIPS: These scholarships are awarded by various business firms and community organizations. The Student Financial Aid Office is responsible for disbursing the funds as required by the donor. Application must be made directly to the agency or institution which offers the scholarship.

GRANTS

BASIC EDUCATIONAL OPPORTUNITY GRANT PROGRAM: This federal program provides assistance to financially needy students. Under current law, the maximum awarded funds under this program cannot exceed \$1400, minus the amount you and your family can contribute toward the cost of education. A minimum grant of \$200 may be awarded to eligible students. Availability of the funds for the program, the family contribution and the cost of the student's educa-

tion determine the amount of the grant, which cannot exceed one-half the cost of the student's education. Application forms are available in the student Financial Aid Office.

FLORIDA STUDENT ASSISTANCE GRANT: This grant program, sponsored by the State of Florida, is designed to provide assistance for qualified students who show exceptional financial need. Priority in making awards from available funds is given to entering freshmen, junior college transfers, and other applicants in the order stated. A separate application and financial need analysis must be processed to the State Department of Education in Tallahassee.

LAW ENFORCEMENT EDUCATION GRANT: This grant program, which awards funds to in-service law enforcement officers, may provide funds up to the amount of fees each quarter. It is restricted to students who are majoring in Criminal Justice and have been accepted into the program. Students may be part-time or full-time and do not have to establish financial need as required in most other programs.

NON-FLORIDA TUITION WAIVER: Non-Florida residents possessing skills or abilities which comprise a positive contribution to the University environment may have their tuition waived through the Board of Regents. These funds are awarded on a quarterly basis by the individual colleges. Anyone requesting this type assistance should contact the Dean of his college in writing, and complete a general financial aid application.

SUPPLEMENTAL EDUCATIONAL OPPORTUNITY GRANT PROGRAM: Qualified students who are of exceptional financial need may receive assistance under this federally funded program. Applicants must need and agree to accept an equivalent amount of matching funds from sources such as scholarships, loans, and employment programs. Applicants must be accepted for enrollment or be in good standing as full-time undergraduate students. The recipients must be U. S. Citizens or must live in the U. S. for other than a temporary purpose, and must intend to become permanent residents. Students under this program must maintain normal progress to be considered for additional funds.

EMPLOYMENT

COLLEGE WORK STUDY PROGRAM: This federally sponsored student employment program provides funds for students who are enrolled full-time, who show evidence of exceptional financial need and who are capable of maintaining good academic standing while employed under the program. The program is designed to allow students to pay part of their educational expenses by working on campus, up to 20 hours per week, while classes are in session. Subject to availability of funds, students may work up to 40 hours per week during vacation periods and summers.

ON-CAMPUS PART-TIME EMPLOYMENT (OPS): This is an institutionally funded work program designed to provide part-time employment on campus, with no prerequisite of financial need. Application for this type employment may be made through the individual departments or the Student Financial Aid Office.

PLACEMENT CENTER

of the Placement Center. The provision of these services requires the development of student personnel files and resumes, therefore, seniors are urged to register with the Placement Center three quarters prior to graduation.

All students are invited to take advantage of the career counseling services offered by the Center, and to avail themselves of off-campus, part-time and summer employment opportunities.



DEVELOPMENTAL CENTER

The Developmental Center offers a professional staff of counselors to aid students in selecting vocational-educational objectives, overcoming learning difficulties, solving problems of personal-social adjustment, developing speech or hearing skills and dealing with marital and other relationship problems. A full range of tests is available along with an occupational library, developmental reading and study skills training, and a speech and hearing service.

Any student may request the assistance of the Center whenever he feels the need. He might, for example, desire increased understanding of himself and his relationship with others or he might seek to gain additional satisfaction from his learning experiences. Tests are often used to help the individual student evaluate his own interests, aptitudes, and abilities. The services of the Center are voluntary and all aspects of counseling are confidential.

STUDENT ACTIVITIES

Personal development may, in part, be enhanced through informed, experienced, dedicated University and community participation. Frequently, activities are referred to as "extracurricular," but at Florida Technological University student activities are regarded as a part of the total educational program, a supplement to the individual student's academic program. The University, through student cooperation and with the assistance of student organizations, sponsors a variety of cultural and entertainment programs which will contribute to the student's academic, recreational, and cultural activities. Additionally, ample opportunity to become a member of occupational, professional, social, and honorary organizations is provided. The student plays an important role in determining how much student organizations enhance personal development. It is the desire of the University to appeal to the interests of students and to provide opportunities for students to become acquainted with fellow students and faculty members.

STUDENT GOVERNMENT

The purpose of the Student Government at Florida Technological University is to represent student opinion; advance the cause of students both socially and academically; promote communication, cooperation and understanding among students, faculty, and administration; suggest improvements necessary for the welfare of the students; and to insure that Student Government shall continue to be used as a democratic instrument of change at FTU.

The Student Government of FTU represents the interests of Students through its executive and legislative branches. The Student Senate is composed of representatives from every college and class. In addition to these elected offices, there are many openings available for appointed offices or on Student Government committees. By active participation in Student Government, or by voicing opinions and ideas through representative legislators, a student may gain valuable experience in the democratic processes — its freedoms and responsibilities. Students interested in working with the Student Government may obtain information from any member of Student Government or from the Office of Student Affairs. Student Government offices are located in the Village Center.

OFFICES OF DEAN OF MEN AND DEAN OF WOMEN

Students are urged to take advantage of the many services and educational programs available beyond the classroom. These services and programs are provided to facilitate learning and supplement academic instruction. The Dean of Men and Dean of Women are available to help students in their attempts to become familiar with these services and activities and to become involved in educational experiences beyond the classroom. The Dean of Men and Dean of Women plan and assist in the development of University programs that provide for the personal, social, and academic adjustment of students. They counsel students for personal, academic, financial and social problems, and as necessary refer students to specialized, professional services. The Deans are the primary contact for students seeking information or assistance in non-academic areas of university operations.

CHILD CARE CENTER

The Edyth Bush Charitable Foundation, through a grant, has made possible the construction of an on-campus child care center. The child care program is designed as a student service which will enable the University to assist student parents by providing complete child care while parents attend class. The center, staffed by personnel experienced in early childhood development, is available to students in academic programs requiring internships and observations. For further information contact the Office of the Dean of Women.

OFFICE OF VETERANS' AFFAIRS

The Office of Veterans' Affairs is a "one-stop" center for students who are utilizing veterans' educational benefits in order to further their education. The Office has a professional staff augmented by student veterans to assist in providing information concerning entitlements, filing claims to the Veterans Administration, and certifying enrollment at the University. The office also provides information and referral services for personal and academic problems. All veterans

and dependents are urged to contact the office early in the process of applying for admission to FTU.

VILLAGE CENTER

The center of student life on the Florida Technological University campus is the Village Center, a campus-community facility serving students, faculty, University patrons, alumni and guests. It contains food service facilities, conference rooms, art gallery, games area and lounge areas where the student may relax during his leisure moments. Offices for student organizations are located in the Village Center. Under the administration of the Director of the Village Center, many student activity programs are conducted for the social, cultural and recreational interests of all students.

CAMPUS ATHLETICS

Intramural Sports, composed of team, dual, and individual competition on campus are organized into leagues representing students, staff, and faculty. Tournaments are conducted to determine top teams in each of a variety of activities with trophies awarded to winners. Sports in the intramural program range from flag football and 3-man basketball for male students to powderpuff football and volleyball for the women. There is a total of 18 sports for men, 12 for women, and seven that pair men and women.

Extramurals as the name implies, are a step up in the sports program. Activities are not limited to on-campus competition and are open to students only. Club teams compete regularly with teams from other campuses in and out of the State of Florida. Each sports program has a qualified coach and also serves as a basis for possible inclusion in FTU's varsity program. For men, there are cross country, track, soccer, golf, crew, archery, weightlifting and swimming. For women, there are the sports of basketball, swimming, tennis, crew and archery. Additional information on this sports program can be obtained from the Intramural and Extramural Office.



The Intercollegiate Athletic program encompasses five men's varsity sports and two women's varsity sports. Men's teams compete in baseball, basketball, soccer, tennis and wrestling. Women compete in volleyball and softball. At least one of these sports engages in varsity competition during each quarter of the regular academic year. FTU teams compete against some of the leading institutions of the south-east region of the U.S., and have attained national ranking in NCAA Division II competition. Three athletes were honored during the 1974-75 season with Honorable Mention All America athletes in soccer and basketball and a Second Team All-America selection in baseball. FTU is a member of the new Sunshine State Conference.

STUDENT CONDUCT

Students are subject to federal and state laws and local ordinances as well as regulations prescribed by Florida Technological University and the Florida Board of Regents. The breach or violation of any of these laws or regulations may result in judicial or disciplinary action.

When a student is involved in an offense resulting in criminal charges, prior to his admission, the circumstances of the case may be reviewed by the appropriate Student Affairs Committee to consider the student's eligibility for admission to the university as well as participation in extracurricular activities.

CLASSROOM RESPONSIBILITY

Students are responsible for maintaining a classroom decorum appropriate to the educational environment. When the conduct of a student or group of students varies from acceptable standards to such an extent that normal classroom procedures are interfered with, the instructor has the authority to remove the offending party from the room.

SCHEDULE OF FEES

A student's basic expenses at the University will be for tuition fees, room and board, textbooks, other instructional supplies, and miscellaneous items.

Required fees are established by the Board of Regents and the Florida State Legislature and are subject to change without notice.

It is required that all University fees be paid at or before regular registration time. University policies do not permit deferring fees or paying by installments during the quarter. Failure to pay fees on or before due date can result in a \$25.00 late registration fee.

The following schedule applies to all Florida Technological University students:

General Fees and Costs

- A. Application fee (required with all applications for admission to the University and not refundable) \$15.00
- B. Registration Fees per quarter for campus, centers, and continuing education courses.

	Resident	Non-Resident
Lower Division*	\$14.00 per hr.	\$37.00 per hr.
Upper Division*	\$15.00 per hr.	\$47.00 per hr.
Graduate*	\$20.00 per hr.	\$57.00 per hr.
Thesis*	\$22.00 per hr.	\$59.00 per hr.

*Lower division courses are those numbered 0-299.

Upper division courses are those numbered 300-499.

Graduate courses are those numbered 500-698.

Thesis is course number 699.

- C. Room and Board (required of student living in University residence halls) per quarter \$400.00 - \$450.00
Charge for late payment \$15.00
- D. Books and supplies (estimated) per quarter \$50.00
- E. Late Registration (for all students who register after the time provided under the academic calendar) \$25.00
- F. Vehicle Registration (required of everyone operating a motor-powered vehicle on campus) per calendar year for full-time, part-time students, and courtesy students from other institutions.
Student's fee \$10.00
- G. Reinstatement Fee (for all students whose registration has been cancelled and reinstatement has been approved) \$25.00
This fee is in addition to the late registration fee.
- H. Student Health Fee (per quarter) \$ 8.00

CHECKS

The University will accept personal checks for accounts due to the University. Each student is urged to make his own financial arrangements through his choice of commercial banks. The University Cashier will cash personal checks not exceeding \$50.00. The University is required to collect a \$5.00 Service Fee for any check, draft or order, which may be returned by the bank for any reason.

REFUND OF FEES

A refund of fees will be made under certain conditions upon presentation at the Cashier's Office of a Certification of Withdrawal issued by the Registrar. No refunds will be made under this policy except upon proper application.

- A. Full refund up to the end of the "drop/add" period.
- B. No refund after the end of the "drop/add" period, except:
 - 1. Involuntary call to active military service (full refund less \$3.35 per hour).
 - 2. Death of student (full refund less \$3.35 per hour).
 - 3. When a student contracts an incapacitating illness of such duration and severity as to prevent the successful completion of the academic program for the term enrolled, (Full refund less \$3.35 hour).
 - 4. Cancellation of the course by the University.

PAST DUE ACCOUNTS

Any, and all, financial obligations to the University must be met by the student if "good standing" is to be maintained. Failure to meet such obligations can result in the withholding of grades and transcripts, and denial of registration and readmission to the University. The services of a professional collection agency; and recourse to the courts may also be invoked if deemed necessary by the University Comptroller. All costs of collection, including attorney's fees shall be borne by the debtor.

ADMINISTRATIVE AND ACADEMIC POLICIES

ADMISSION REQUIREMENTS

The following classes of applicants are eligible for consideration as candidates for admission to credit courses. It should be understood, however, the minimum requirements are given and that admission to the university is a selective process. The satisfaction of minimum requirements does not automatically guarantee admission.

FRESHMAN APPLICANTS (First College Attended)

Eligibility is subject to satisfactory receipt and review of all items requested in the admissions process. All applicants must have earned 12 high school academic units (i.e., from the areas of English, foreign language, mathematics, science, or social studies).

Graduates of Accredited Florida High Schools who receive no unfavorable character recommendations from officials of their high schools, have an overall average of "C" or better for all academic subjects, and have earned a minimum score of 300 on the Florida State-Wide Twelfth Grade Test.

Graduates of Accredited Florida High Schools who receive no unfavorable character recommendations from officials of their high schools, have grades placing them in the upper 40 percent of their graduating classes, and have acceptable test scores:

850 total or higher on the SAT (CEEB)—with no lower than 400 on either the verbal or math portion or

20 composite or higher on the ACT or

60% or higher on the CQT (Senior College Freshman Norms).

Graduates Possessing a State High School Equivalency Diplomas based upon General Education Development testing and who have acceptable high school records for any portion attended, have acceptable test scores (see above) and, where necessary, favorable recommendations from their schools and/or employers.

Graduates Who Meet Requirements in the First Two Categories Above, But Who Were Graduated from a Regionally Unaccredited High School may enter on provisional admission. By obtaining a 2.0 (C) GPA or better at the end of the quarter during which 12 or more quarter hours are attempted, the provisional status shall be removed.

Graduates Who Do Not Meet These Entrance Requirements and Are Considered Borderline Admission Cases are referred to the University Admissions and Standards Committee for review and possible admission on Academic Warning. It may be recommended that a student attend a Junior College to further his competency and to earn an Associate of Arts degree before reapplying to FTU.

COLLEGE TRANSFER APPLICANTS

Undergraduate students transferring from other colleges or universities into degree programs must have a minimum of 2.0 (C) GPA on all college work previously attempted and be eligible to return

to their last previously attended institutions. Should the applicant have less than 2 years (90 quarter hours or 60 semester hours) of transferable college credit, he must meet the University's freshman entrance requirements and, therefore, furnish his high school record and a satisfactory test score.

Credits in which the applicant has achieved a grade of "D" (1.0) or better are transferable. Refer to page 42 for "D" grade transfer policy.

No credit will be awarded for college-level GED tests, for courses given without a grade, nor for courses carrying grades but not credit hours. However, evidence of satisfactory completion will be posted on the student's permanent record.

Completed service school courses may be evaluated on the basis of the recommendations of the American Council on Education when official credentials have been properly presented. Credit may be granted when courses are equivalent to those offered by the University. However, recommendations by the A.C.E. are not binding upon the University, and application for service school course credit should be made at the time of admission.

Graduates from other accredited four-year institutions who apply for admission to work toward a second undergraduate degree must meet the regular requirements of the University (e.g., See Undergraduate Degree Requirements, page 46 and Second Bachelor's Degree, page 56). A baccalaureate degree or higher from another accredited four-year institution satisfies the Basic Environmental Studies Program requirements.

Transfer students from Florida State Junior Colleges or Universities may satisfy the Basic Environmental Studies Program requirements by completing prior to transfer, the general education program prescribed by the junior college or university. Transfer applicants with incomplete General Education Programs (FTU Environmental Studies Program) from state institutions will have their credits evaluated on an individual basis.

1. *Florida State Junior College Transfers.* Admission to the University is normally granted to any graduate of an accredited junior college in the State of Florida who has completed the Associate of Arts program and graduated with a 2.0 GPA based upon all work attempted. Admission Standards for all Florida State-supported universities are established by the Florida Board of Regents.
2. *Private Colleges and Out-of-State Institutions.* The general education program credits of transfer applicants from private junior and senior colleges and out-of-state institutions will be evaluated on an individual basis.
3. *Unaccredited Colleges or Universities.* Transfer applicants who otherwise meet all requirements, but who are entering from unaccredited colleges (having a satisfactory rating by the American Association of Collegiate Registrars and Admission Officers), may enter on provisional admission. By earning a 2.0 GPA or better at the end of the quarter during which 12 or more quarter hours are attempted, the provisional status shall be removed and any credit to be transferred may be validated.

College, another Florida University, or another college or university outside the state, it is the student's responsibility to execute the necessary petition(s) in order to determine how his or her courses will transfer with regard to degree progress at FTU. Each College has different petition procedures but generally the petitioning should be done during the second full quarter of the student's residency at FTU in order that the accepted transfer courses are clearly understood by the student and the faculty advisor early in the student's program.

Final determination regarding applicability of credits accepted in transfer toward the fulfillment of degree requirements resides with the College in which a student is enrolled.

The Admissions and Standards Committee membership is composed of representatives from the faculty, the student body, the Student Affairs' Office and the Admissions Office. This committee meets weekly to review marginal cases and to consider the appeals of applicants.

APPLICATION DEADLINE

Applications for admission should be received 28 days prior to the first day of classes for the quarter in which the student wishes to enroll (consult calendar for exact date). Candidates whose applications have not cleared because of failure to receive supporting documents on time, may be admitted on a temporary basis after consultation with the Admissions Office. Applications for readmission and special, nondegree registrations will be accepted after this date.

RECORDS DEADLINE —

All Support Documents

All records requested should be received not later than 15 days preceding the first day of classes, otherwise the applicant may be required to register on a temporary basis assuming it can be determined he or she appears admissible. Records of Temporary Students must be received within four weeks (20 class days) from the first day of classes, or the student may be withdrawn at the discretion of the University Registrar and no fees will be refunded.

RECORDS — Validity of Documents

All supporting admissions documents (e.g., transcripts, health reports, and test scores not recorded on official transcripts) must be received directly from the issuing institution, physician, or testing agency. If the University finds that an applicant has made a false or fraudulent statement or a deliberate omission on his application, residency affidavit or an accompanying document or statement, that student may be denied admission. Should the student be enrolled when such fraud is discovered, he may be immediately withdrawn (with no refund), further enrollment denied, and credit earned and any degree based upon such credit invalidated. Actions for this type of offense will be handled administratively by the University Registrar's Office after notification to the alleged violator and hearing by that office.

READMISSION

Students not in attendance during an academic quarter (exclusive of the summer term) must submit an application for readmission and such other information as may be required, including transcripts of courses attempted in the interim.

Readmission of a disqualified student is not automatic. If a student has been disqualified or excluded, he/she must be readmitted by action of the University Admissions and Standards Committee after review of the student's total record.

Any former student who withdrew with a cumulative or overall grade point average of less than 2.0 (C) and who is considered readmissible, will be readmitted on academic warning or academic probation as appropriate.

CONCURRENT ENROLLMENT

Concurrent enrollment in another institution is permitted only when approval to be a transient student has been obtained.

SPECIAL STUDENTS

Qualified high school students seeking admission prior to graduating should refer to Early Admission, Non-Degree, Transient and Audit sections.

TEMPORARY STUDENTS

Any student who applied before the application deadline date and is permitted to register and attend classes without a complete admission file is granted a maximum of four weeks (first 20 class days), to furnish all required records. Failure to do so, or if records indicate ineligibility, will result in withdrawal at the discretion of the University Registrar and no fees will be refunded.

TRANSIENT STUDENTS

FTU Students. A Florida Technological University degree-seeking student who wishes to earn credit at another college or university must obtain prior approval for specific courses from the Dean or Department Chairman of his respective college and the Registrar of FTU. Credit earned without this transient approval may not be accepted.

Students from Other Colleges or Universities. Students in good standing with a 2.0 overall academic average in any accredited college or university and wishing to enroll for one quarter at FTU may be considered for admission as a transient. Such enrollment terminates at the end of one quarter and does not presuppose regular acceptance by any college or department of the University. A statement indicating the parent institution's willingness to accept the credits earned and that the student is in good standing is required. This statement protects the student and serves as a basis for admission in lieu of transcripts.

AUDIT STUDENTS

University Students. A student may be admitted to a class as an auditor with the approval of the chairman of the department in which the course is offered. A course may be changed from audit to credit only during the Add/Drop Period and then only with his faculty advisor's consent. Auditors will not receive university credit, nor is the instructor obligated to administer any tests.

No student may change from credit to audit unless passing.

CONTINUING EDUCATION STUDENTS

Application, registration, and payment of fees for those taking a Con-

tinuing Education course should be completed prior to or during the first class meeting. When making application to take a Continuing Education course, checks should be attached to the Application form and given to the course instructor or forwarded to the Continuing Education Office. The regular institutional calendar will apply to Continuing Education classes.

Students who wish to add or drop a Continuing Education course must do so during the regular on-campus Add/Drop period. Following the Add/Drop period students may withdraw from a Continuing Education course by completing the standard withdrawal forms.

Students who drop a course any time during the Add/Drop period will receive a full refund of fees. After the Add/Drop period no refund of fees will be made except in instances of:

1. Involuntary call to active military duty.
2. Death of a student.
3. Illness of the student of such duration and severity as confirmed in writing by a physician that completion of the term is precluded.
4. Cancellation of the course by the university.

In the first three instances the entire per credit hour charge may be refunded except for \$3.35 per credit hour which is required for collection under bond and trust obligations. Full refund of fees will be made when the university finds it necessary to cancel a course.

NON-DEGREE STUDENTS

An individual may enroll as a non-degree seeking student using a regular application form. Although such students do not have to meet all of the regular admission requirements of degree seekers, there must be some satisfactory basis for acceptance.

In order to change to degree-seeking status, a non-degree student must provide the academic records required of degree seekers. Where necessary, a student may establish a basis for changing to degree status by completing 24 quarter hours of work here with a 2.0 FTU GPA or above. Such students should be cautioned that *no more than 45 quarter hours earned as a non-degree student can be counted towards a degree. Change of status is not automatic. Degree status must be applied for through the Admissions Office.* The student's total record will then be reviewed and a decision made.

INTERNATIONAL STUDENTS

Undergraduate applicants should refer to the Admissions Requirements Section of this Bulletin and graduate applicants to the Graduate Studies Section. In addition, the following is required for admission:

1. International student applications, undergraduate and graduate, must be received at least three months prior to the desired term.
2. Applicants whose native language is not English must submit satisfactory scores on the Test of English as a Foreign Language (TOEFL).
3. Certified English translation of official records showing grades or marks of courses taken, range of passing and maximum marks,

and noting successful completion of schooling must be submitted.

4. Applicants must file a financial statement confirming availability of finances for each year of study.

Any additional information or records requested must be furnished before admissions can be final.

MEDICAL HISTORY REPORT

A new student must furnish a Medical History Report on the approved university health form. It must be submitted to and approved by the Student Health Service before registration will be allowed. The Medical History Report form will be mailed to the applicant with receipt for the Application for Admission.

FLORIDA RESIDENCE

For the purpose of assessing registration fees, students shall be classified as Florida and non-Florida. A Florida student is a person who shall have resided and *had his domicile in the State of Florida for at least twelve (12) months immediately preceding the first day of classes of the current term.*

In applying this policy "student" shall mean a person admitted to the institution. If such person is a minor, it shall mean parents, parent, or legal guardian of his or her person.

The word "minor" shall mean a person who has not attained the age of 18 and whose disabilities of minority have not been removed by reason of a marriage or by a court of competent jurisdiction.

The word "domicile" for fee-paying purposes shall denote a person's true, fixed, and permanent home and place of habitation. It is the place where he intends to remain, and to which he expects to return when he leaves without intending to establish a new domicile elsewhere.

The word "parent" shall mean a minor's father or mother or, if there is a guardian or legal custodian of his person, then such guardian or legal custodian.

In all applications for admission by students as citizens of Florida, the applicant, or, if a minor, his parents or legal guardian shall make and file with such application a written statement under oath that such applicant is a bonafide citizen, resident, and domiciliary of the state of Florida entitled as such to admission upon the terms and conditions prescribed for citizens, residents, and domiciliaries of the State.

A non-Florida student is a person not meeting the requirements outlined above. A non-Florida student (or if a minor, his parent or parents) after having been a resident and domiciliary of Florida for twelve months may apply for and be granted reclassification prior to the first day of classes of any subsequent term, in accordance with the provisions of the preceding paragraph. In addition, the application for reclassification must be accompanied by a certified copy of a declaration of intention to establish domicile filed with the clerk of the Circuit Court as provided by Section 222.17, Florida Statutes.

When satisfactory proof is given to the registering authority of the University it will be presumed that:

1. The spouse of any person who is classified or is eligible for classi-

fication as an in-state student is likewise entitled to classification as an in-state student.

2. A minor whose parent is a member of the armed forces and stationed in this state pursuant to military orders is entitled to classification as an in-state student. The student, while in continuous attendance, shall not lose his residence when his parent is thereafter transferred on military orders. A member of the armed forces of the United States stationed in this state on military orders shall be entitled to classification as an in-state student while on active duty in this state pursuant to such orders.
3. No person over the age of 18 years shall be deemed to have gained residence while attending any educational institution in this State as a full-time student, as such status is defined by the Board of Regents, in the absence of a clear demonstration, that he has established domicile in the State.
4. Any student who remains in this State when his parent, having therefore been domiciled in this State, removes from this State, shall be entitled to classification as a Florida student, so long as his attendance at a school or schools in this State shall be deemed "continuous" if the person claiming continuous attendance has been enrolled at a school or schools in this State as a full-time student, as such term is defined by the Board of Regents, for a normal academic year in each calendar year, or the appropriate portion or portions of such years, thereof, since the beginning of the period for which continuous attendance is claimed. Such persons need not attend summer sessions or other intersessions beyond the normal academic year in order to render attendance "continuous."

Any student granted status as a Florida student which status is based on a sworn statement which is false shall, upon a determination of such falsity, be subject to such disciplinary sanctions as may be imposed by the president of the university, which sanctions may include permanent expulsion from the State University System or any lesser penalty.

The following categories shall be treated as Florida residents for tuition purposes:

1. Veterans of the United States of America retired with twenty (20) years or more of active military service, including dependent members of their immediate families, who are in Florida at the time of retirement, or who move to Florida within one year following retirement and intend to make Florida their permanent home.
2. Full-time elementary, secondary, and junior college faculty members under contracts in the State of Florida.
3. Full-time faculty and career employees of the University System and members of their immediate families. (This is construed to exclude the spouses of students.)

To establish Florida residence a student applying for admission should complete the residence affidavit on the application form.

To change status from non-Florida to Florida a student must present to the Admissions Office a copy of the Declaration of Intention to Establish Domicile and the completed Residence Affidavit Form. To claim the military exception the student must furnish the Admissions

Office a copy of the military orders showing assignment to Florida. A public school official must submit a written statement from his superior as to his public school status. A University employee must submit a statement from his employer as to his employment status.

TRANSFER OF "D" GRADES

Credits earned in courses transferred with "D" grades will count toward the credits required for the baccalaureate; however, it is at the discretion of the department or college of the University offering the major as to whether courses with "D" grades in the major may satisfy requirements in the major field.

SUBSTITUTION OF COURSES

If a student has completed a course similar to one required at FTU, he may file a petition to have an exception made in meeting the FTU requirement. A petition to substitute any course or courses in the Environmental Studies Program should be directed to the Standards Committee of the college in which the student is registered. To make a substitution for requirements in a major, the student should direct his/her petition to the department in which he/she is registered.

TIME-SHORTENED DEGREE OPPORTUNITIES

Florida Technological University provides a number of options by which students may shorten the time required to complete the baccalaureate degree. These options permit the university to recognize high levels of academic achievement and acquisition of knowledge prior to or during attendance at the university. Procedures which may be used include the Early Admission Program, the College Level Examination Program (CLEP), the Advanced Placement Program (A.P.P.) and the University Course Credit by Examination.

1. Early Admission Program

Students who have demonstrated exceptional academic ability may be permitted to enroll as students at Florida Technological University any time after completion of the junior year in high school. To be considered for full-time Fall Quarter Early Admission, applicants must have:

- a. Test scores near the top 15th percentile statewide or nationally (FTG - 420 or above, SAT - 1100 or above, ACT -24 or above).
- b. "A" - "B" grades in high school.
- c. A recommendation from the student's high school counselor.
- d. A letter of permission from parents or guardian.
- e. A campus interview to ascertain the student's maturity and ability to adjust to collegiate responsibilities.

Qualified students may dual-enroll on a part-time basis, taking one or two courses while completing their high school program. An interview and letters of recommendation from parents and principal are required.

Students desiring admission prior to high school graduation should contact the Admissions Office for an appointment.

2. College Level Examination Program (CLEP)

Florida Technological University grants university credit for examinations taken under the CLEP program provided the score obtained is at the 50th percentile or above on the National Sophomore CLEP norms.

Florida Technological University will award up to 67½ quarter hours of university credit under the CLEP program. (See page 44).

3. Advanced Placement Program (A.P.P.)

Students who have participated in the Advanced Placement Program in high school and received a score of three (3), four (4) or five (5) on the national examinations will receive from 4 to 8 quarter hours of college credit in each of the appropriate subject areas. Consult your high school guidance counselor or write to the Educational Testing Service, Princeton, New Jersey 08540, for additional information.

4. University Course Credit by Examination

Regularly enrolled *undergraduate students at Florida Technological University may obtain credit for specific university courses through Departmental Examinations. Those who feel they have acquired the knowledge and/or skills a specific university course should contact their advisor and the chairman of the department in which the course is offered to arrange for an examination. Degree credit will be awarded for those courses successfully completed by departmental examination. Credit by examination can not be used to raise a grade in a course previously completed or to reduce the last 45 q.h. of the residency requirement. Permission to take an examination is granted by the Dean of the college in which the course is offered. Standard forms requesting university course credit by examination may be obtained from an advisor or in the department chairman's office. (See page 42).

*Excludes transient and non-degree students.

FLORIDA TECHNOLOGICAL UNIVERSITY CLEP POLICY

CLEP credit may be earned by the following methods — CLEP general examinations, CLEP general examination subtests and CLEP subject examinations. A student may earn a maximum of 67½ quarter hours (45 semester hours) of credit through this program. Successful completion of CLEP examinations means performance at or above the 50th percentile.

Awarding CLEP credit is subject to the conditions listed below.

1. Credit may be awarded in the CLEP general examination area, CLEP general subtest area, or CLEP subject examination area provided the student: (a) has not previously received comparable college course credit in the CLEP examination area, (b) does not receive comparable college course credit in the CLEP examination area in the same quarter the examination is taken or in a subsequent quarter, (c) has not previously completed a more advanced course in the examination area, and (d) does not complete a more advanced course during the quarter in which the CLEP examination is taken.
2. Partial credit may be awarded in three of the CLEP general examination subtest areas (Humanities, Natural Sciences, Social Sciences). Partial credit may be awarded to students who have course duplication in one subtest area but not in the other subtest area (e.g., a student has completed HUM 201 but has not completed ENG 201 or another more advanced literature course). In such a situation the student would be eligible to receive credit in the literature subtest area provided that he receives a satisfactory total score and a satisfactory subtest score. The restrictions listed in Item 1 also apply to partial credit.

The following table provides information related to the CLEP general examination areas and subtest areas for which credit may be awarded. In addition, this table delineates the number of credit hours per examination, the minimum passing scaled score, the courses and other

CLEP examinations which duplicate the CLEP general examinations, and the CLEP usage. Information can be secured in the Developmental Center on CLEP subject examinations for which credit may be awarded.

It is important to note that a maximum of 67½ quarter hours in any combination of extension, correspondence, CLEP, Time-Shortened Degree, and Armed Forces Service School Credits will be accepted by the University for application toward an undergraduate degree. In addition, CLEP credit can not be used to reduce a grade point deficiency. For example, a CLEP grade can not be substituted for a grade awarded for a previously completed course.

CLEP General Examinations, Maximum Credit Hours, Minimum Passing Scaled Scores, Courses and Examination Which Duplicate the CLEP General Examinations and Recommended CLEP Usage

CLEP GENERAL EXAMINATION*		Maximum Qtr Hours		Minimum Passing Scaled Scores		Courses and Examinations which duplicate the general examination test area		CLEP Usage
Area	Subtest Areas	Gen Exam	Subtest	Total*	Subtotal	FTU Course	Other Sub. Exams	
English Composition		9		494		ENG 100: Vocabulary Study ENG 101: Composition I	English Comp	4 QH Comm: Comp req. 5 QH General Elective (Lower Division)
Humanities	Literature	9	4	489	49	ENG 201: Lit of Modern Man		4 QH Cult & Hist Foundation: Any Lit req.
	Fine Arts		4		50	Intro to Art** HUM 201: W. Hum. Survey MUS 199, 210 or 320: E-ment of Music		4 QH Cult & Hist foundation: Western Hum. Survey req.
								1 QH General Elective (lower Division)
Mathematics		9		497		Remedial or Intro Math* MATH 100: Prin. of Math MATH 101: Elem School Math I MATH 104: Fund Algebra MATH 115: Finite Math		4 QH Math Sci: Math req. 5 QH General Elective (Lower Division)
Natural Science	Biology	9	4	489	50	BIOL 103: Bio Principles	Biology	4 QH Sci Environment: Bio Sci req.
	Physical Science		5			ENGR 100: Oceanography & Space CHEM 101: Chem & Society PHYS 100: Physical Sci		5 QH Sci Environment: Phy Sci req.
Social Science History	History	9	4	488	49	HIST 203: West. Culture AM HIST: U.S. History Survey**	Western Civilization	4 QH Cult & Hist foundation: Hist req.
	Social Science		4		50	Soc 201: General Soc. PCL 201: Am Nat Govt. ECON 201: Economics & Man	Intro. to Sociology Am. Govt.	4 QH Soc Sci: Either SOC 201, PCL 201, or ECON 201 req.
								1 QH General Elective (Lower Division)

*The minimum total score must be attained before subscores can be used for awarding credit.

**Not currently offered at Florida Technological University.

Office of Institutional Research
November 1975



DEGREE REQUIREMENTS

UNDERGRADUATE

The requirements for a major, including the University graduation requirements, must be met by each student who receives a degree from Florida Technological University. The minimum bachelor degree requirements for all students are as follows:

A minimum of 180 academic quarter hours credit with at least a "C" average (2.0 GPA) for all course work attempted (both FTU and overall).

A minimum of 90 quarter hours of work taken for the bachelor's degree must be earned in a senior institution.

A minimum of 72 quarter hours of work taken for the bachelor's degree must be taken in 300-level courses or above.

A minimum of (and the last) 45 quarter hours must be earned in residence at FTU. Credit by examination may not be used to satisfy this requirement.

A maximum of 67½ quarter hours in any combination of extension, correspondence, CLEP, Time Shortened Degree and Armed Forces credits accepted by the University may be applied toward an undergraduate degree. The acceptance of credit for degree purposes is subject to review by the college standards committee and may differ from college to college. Additional quarter hour credit may be granted by examination given at FTU.

A student has the option of fulfilling the course requirements for graduation under any single FTU Bulletin in force during his most recent period of continuous attendance. The use of a combination of Bulletins to fulfill degree requirements is not permitted. Should his attendance be interrupted, his continuous attendance would begin with his most recent admission. Summer quarters are not included in determining interrupted attendance. Except for the foregoing, the Administrative and Academic Policies of the current Bulletin will be considered official for graduation. A Florida community college graduate may elect to use the FTU Bulletin in force at the beginning of his most recent continuous attendance at the community college provided his attendance continues uninterrupted including his transfer to FTU.

GRADUATE

The following University-wide graduate degree requirements must be met by each student who receives a master's degree from Florida Technological University. The minimum master's degree requirements are: at least 45 quarter credit hours of graduate work, with a minimum average of "B" for all courses attempted and at least one half of the minimum required course work must be numbered 600 or higher.

Additional graduate program degree requirements are specified in this Bulletin in the section on Graduate Studies in the graduate program section of each of the individual colleges.

DEGREES OFFERED

ASSOCIATE OF ARTS DEGREE

Florida Technological University students who satisfactorily complete 90 quarter hours of acceptable college work with an FTU and overall grade point average of 2.0, may apply to the Registrar's Office for an Associate of Arts Degree. The required 90 quarter hours must include all of the basic requirements of the Environmental Studies Program and the last 30 credits must have been earned in residence at FTU.

The Associate of Arts Degree is awarded on application only, and an application should be made in the quarter in which the requirements for the degree will be satisfied or any time thereafter prior to the completion of the baccalaureate degree. Once the student has made application for the A.A. degree, the Registrar will notify the Office of Academic Affairs for verification of requirements. When the Registrar is notified of verification, the Associate of Arts Degree certificate will be forwarded to the recipient.

UNDERGRADUATE

The University offers the degrees of Bachelor of Arts, Bachelor of Engineering Technology, Bachelor of Fine Arts, Bachelor of Science, Bachelor of Science in Business Administration, Bachelor of Science in Engineering, and Bachelor of Science in Social Sciences. These degrees are available in the following Colleges, with major or areas of specialization as indicated:

College of Business Administration

Bachelor of Science in Business Administration (B.S.B.A.)

Majors: Accountancy, Business Administration (General), Economics, Finance, Management, Marketing

College of Education

Bachelor of Arts (B.A.)

Major: Elementary Education

Major: K-12 with specializations in Library Media Specialist, Physical Education, Visual Arts Education

Major: Secondary Education with specializations in Business Education (General), Business Education/Basic Business and Accounting, English Language Arts, Foreign Language, Mathematics, Science Education/Biology, Science Education/Chemistry, Science Education/Physics, Social Sciences, Speech, Technical/Vocational

College of Engineering

Bachelor of Science in Engineering (B.S.E.)

Majors: Environmental Engineering, Electrical Engineering, Engineering Mathematics and Computer Systems, Industrial Engineering, Mechanical Engineering

Bachelor Engineering Technology (B.E.T.)

Major: Engineering Technology

College of Humanities and Fine Arts

Bachelor of Arts (B.A.)

Majors: Art, Art/Film, English, Foreign Languages (Combination), French, Spanish, History, Humanities, Humanities

and Fine Arts, Music, Music Education, Philosophy,
Theatre
Bachelor of Fine Arts (B.F.A.)
Major: Art

College of Natural Sciences

Bachelor of Science (B.S.)

Majors: Biological Science/Biology, Biological Science/Botany,
Biological Science/Fresh Water Ecology, Biological
Science/Microbiology, Biological Science/Zoology,
Chemistry, Computer Science, Forensic Science,
Mathematics, Medical Record Administration, Medical
Technology, Physics, Radiologic Technology, Respira-
tory Therapy, Statistics

College of Social Sciences

Bachelor of Arts (B.A.)

Majors: Allied Legal Services, Communication, Communica-
tion/Communicative Disorders, Communication/Film,
Communication/Journalism, Communication/Radio-
Television, Communication/Speech, Criminal Justice,
Economics, Political Science, Psychology, Public Ad-
ministration, Sociology, Sociology/Anthropology, So-
ciology/Social Work

Bachelor of Science in Social Sciences

Major: Social Sciences

Office of Academic Affairs

Bachelor of Arts (B.A.)

Major: General Studies

Bachelor of Science (B.S.)

Major: General Studies

GRADUATE

The University offers graduate degrees in the following colleges:

College of Business Administration

Master of Arts (M.A.)

Economics

Master of Business Administration (M.B.A.)

Master of Science (M.S.)

Accountancy

Management

College of Education¹

Master of Arts (M.A.)

Master of Education (M.Ed.)

Administration and Supervision

Elementary Education including specializations in Exceptional
Child, Reading Specialist

Guidance

K-12 with specializations in Library Media Specialist, Music Edu-
cation, Physical Education, Visual Arts Education

Secondary Education with specializations in Business Education,
English Language Arts, Foreign Languages, Mathematics,
Science, Social Sciences, Speech

College of Engineering²

Master of Science (M.S.)

Master of Science in Engineering (M.S.E.)
Master of Science in Environmental Systems Management
(M.S.E.S.M.)

COLLEGE OF HUMANITIES AND FINE ARTS

Master of Arts (M.A.)
English

COLLEGE OF NATURAL SCIENCES

Master of Science (M.S.)
Biological Science
Computer Science
Industrial Chemistry
Mathematical Science

College of Social Sciences

Master of Arts (M.A.)
Communication
Master of Science (M.S.)
Clinical Psychology
Industrial Psychology
School Psychology
Master of Public Policy (M.P.P.)

¹The College of Education through a cooperative program offers work leading to a Doctor of Education Degree from Florida Atlantic University. Information about applications, admission and regulations are available from the College of Education.

²The College of Engineering through a cooperative program offers work leading to a Doctor of Philosophy: Electrical Engineering from the University of Florida.

REQUIREMENTS FOR TEACHER CERTIFICATION

Before a person can teach in the elementary and/or secondary schools in Florida he or she must be certified by the Florida Department of Education. The certification requirements in Florida include 3 basic components:

I. GENERAL PREPARATION

Courses included in this category are normally classified as general education (i.e., Environmental Studies Program) courses. A graduate with a Bachelor's degree from an accredited institution shall be considered to have met the General Preparation requirements.

II. TEACHING SPECIALIZATION

Courses included in this category are normally classified as the major area in a student's college program. However, not all college majors are included in the certification laws. Sections 7 through 36 of the Florida Requirements for Teacher Certification, January 30, 1968, describe the major areas eligible for teacher Certification and each section has an outline for any special subject requirements in the TEACHING Specialization.

III. PROFESSIONAL PREPARATION

These are two means by which students can complete a program in Professional Preparation. They are:

1. The College of Education Career Teacher Program (i.e., a

major in the College of Education).

2. The Alternate Basic Certification Program (i.e., a major in some other college).

Students at Florida Technological University may achieve teacher certification by either of the following methods:

1. Completing the College of Education Program whereby students will automatically be eligible for a Florida Teacher's Certificate.
2. Completing a degree program in another college within the University and, at the same time, satisfying all requirements needed for certification.

QUARTER HOURS EXPLAINED

The graduation credit value of each course of instruction is stated in terms of quarter hours. A quarter hour of credit represents one class hour of work (or two or three laboratory hours of work) per week for a quarter.

GRADING SYSTEM

The University will utilize an alphabetic grading system. This system, with a grade point equivalent per quarter hour, is as follows:

A	- Excellent	4 grade points
B	- Good	3 grade points
C	- Average	2 grade points
D	- Passing	1 grade point
F	- Failure	0 grade point
W	- Withdrawn	0 grade point
I	- Incompleted	0 grade point
X	- Audit (no credit)	0 grade point
S	- Satisfactory (with credit)/ Satisfactory Progress (Research, Thesis, or Dissertation)	0 grade point
U	- Unsatisfactory (no credit)	0 grade point
R (followed by grade)	- Subsequently repeated (no credit)	0 grade point

The grade point average (GPA) is the average number of grade points per quarter hour attempted and is computed by dividing the total number of grade points assigned by the total number of quarter hours attempted, less hours resulting from W, X, and I grades. The grade point average for graduation requirements is 2.0 (C) and will be computed on the student's total academic program.

INCOMPLETE GRADE

A grade "I" (incomplete) is assigned by the instructor when a student is unable to complete a course due to extenuating circumstances, and when all requirements can clearly be completed in a short time following the close of regular classes. The Registrar's Office must be notified of the appropriate grade to be assigned when requirements for the removal of the "I" have been completed. Failure to complete course requirements by the end of the next successive quarter (that is, during the quarter immediately following that in which the "I" was assigned) may, at the discretion of the course instructor, result in the assignment of an "F" grade. It is the student's responsibility to arrange with the instructor for the removal of the "I" grade. The grade of "I" becomes a part of the student's permanent record if not removed by the end of the following quarter. A student may

register for a course in which an "I" was received, but no repeat "R" action will be made on his permanent record.

HONORS

It will be the policy of the University to confer baccalaureate honors recognition at graduation upon those students who attain a grade point average which is in the upper 15% of the range established by all students graduating in the same college during the previous two years. In no case will honors recognition be awarded to a student with a grade point average less than 3.0

Honors awarded will be:

Summa Cum Laude for those students in the upper 5%.

Magna Cum Laude for those students in the upper 10%, but not in the upper 5%.

Cum Laude for those students in the upper 15%, but not in the upper 10%.

For the purposes of establishing honors criteria grade point average reference points will be established **annually** for each college at the end of the summer quarter. Grade point average reference points will be determined by ranking graduates of the previous two years in each college and establishing the minimum grade point averages of students ranked in the upper 5%, 10%, and 15%, respectively, in that college. These reference points will be used during the subsequent Fall, Winter, Spring, and Summer quarters to determine who will receive honors recognition at graduation.

To receive honors recognition, students must have completed a minimum of 72 quarter hours at FTU. All FTU and transfer credit (if any), including those received in the quarter of graduation, will be used to determine official honors for entry on the student's permanent academic record. The quarter of graduation will be excluded in determining honors for listing in the commencement bulletin, as it is printed before final grades are reported, and therefore a student qualifying for honors recognition at commencement may or may not qualify for honors on his academic record.

The grade point average required for honors is based on a minimum of 72 quarter hours at FTU, but will include all college credits earned toward the degree prior to the quarter in which the student is graduated.

DEAN'S LIST

The Dean's List is recognition of scholastic honors for undergraduate students who register for and complete at least 12 Quarter Hours with a 3.4 GPA and no grade less than "C" during a quarter.

REPEAT POLICY

FTU Courses. A student may register to repeat an FTU course at any time prior to completion of the baccalaureate degree. Both grades will be recorded on the student's official transcript but only the last grade received will be used in calculating the grade point average. The student must complete a "change of grade" request at the time he reregisters for the course.

Transfer Courses. If a transfer student takes an equivalent course at FTU which was previously completed at another institution, both grades will be utilized in calculating the student's grade point average. However, if the repeat policy of the previous institution permits students to count only the last grade received in a repeated course, a transfer student may wish to repeat the course at the original institution. Under this procedure a revised official transcript must be provided by the previous institution.

SCHEDULE CHANGES — Add-Drop Policy

Add: Students may add a course during the official Add-Drop Period (the first three to five days of each quarter — see calendar). After the add-drop period, no course may be added. Approval of the student's faculty advisor is necessary before any course change. (For Continuing Education courses "Add's" will be accepted up to and including the second class meeting.)

Drop: Students may drop a course during the official Add-Drop Period (the first three to five days of each quarter — see calendar). The fact that the student was enrolled in a class so dropped will not appear on the permanent record. Approval of the student's faculty advisor is necessary before any course change. For withdrawal after the add-drop period, consult the withdrawal Policy.

ACADEMIC STANDING

It is of major concern to the University that each student should make reasonable progress toward his educational goal. A guidance and counseling service is provided to aid all students at all times, but special attention is given when a student is not progressing satisfactorily. Every effort will be made to aid him in the resumption of satisfactory progress.

Acceptable academic standing at the University is reserved for those students who achieve and retain a GPA of 2.0 (C) or higher. A student remains in good standing academically as long as he achieves normal academic progress required for graduation.

STUDENT CLASSIFICATIONS

Students will be classified by level, on the basis of quarter hours satisfactorily earned:

FRESHMAN:	Through 44 hours.
SOPHOMORE:	45-89 quarter hours.
JUNIOR:	90-134 quarter hours.
SENIOR:	135 or more quarter hours, prior to completion of baccalaureate requirements.
POST BACCALAUREATE:	Any student enrolled in courses, regardless of course level, who has a baccalaureate degree but has not been admitted to a graduate program.
GRADUATE:	Any student enrolled in graduate courses who has been admitted to a graduate program.

Other student classifications are as follows:

AUDITOR:	A student registered for any credit course who is not seeking credit.
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- CO-OP STUDENT:** A student enrolled in the Cooperative Education Program is a full-time student during the work training quarter. There is no break in the Co-Op school calendar. The Co-Op student starts his work training quarter the day after the final day of school and continues through the day before the first day of school for the following quarter. See Veteran's Benefits for Co-Op's.
- SPECIAL STUDENT:** A student of demonstrated academic ability who does not meet the regular requirements for admission (Early Admission, non-degree, transient and auditor).
- TEMPORARY:** A student who applied on time and is permitted to register and attend class pending completion of his admissions file.
- TRANSIENT:** (1) A student registered at Florida Technological University with the approval of some other university or college where he is regularly enrolled, or (2) an FTU student temporarily in attendance at another university or college, with the approval of FTU.
- NONDEGREE:** A student earning credit, but not working on a degree program.

VETERAN'S BENEFITS

Veteran-students eligible to receive VA educational benefits must make initial contact with the Office of Veteran's Affairs, Student Affairs Suite, Administration Building, Phone 275-2707.

Undergraduates must carry at least twelve (12) quarter hours for full VA benefits, nine (9) quarter hours for three-fourths VA benefits and six (6) quarter hours for one-half VA benefits. Five (5) quarter hours or less will be reimbursed to the veteran at cost of instruction only. Those students with an undergraduate degree who are classified as post baccalaureate must meet the same criteria as undergraduates. Veteran-students fully accepted in a graduate degree-seeking program are required to carry nine (9) quarter hours for full benefits, seven (7) quarter hours for three-fourths, and five (5) quarter hours for one-half.

Veterans in a Co-Op status can choose to draw VA Benefits for this period of eligibility as follows:

- (1) During on-campus enrollment the use of eligibility time is the same although the allowance is paid based on one-fourth, one-half, three-fourths, or full-time status. No allowance, or the use of eligibility time, occurs during the off-campus Co-Op work training quarter.
- (2) A Co-Op Veteran may elect to accept eighty percent (80%) of his VA Benefit Allowance for each calendar month of a yearly basis. Although this option does not extend a veteran's eligibility time, it does pay all benefits except twenty percent (20%) providing he is enrolled for the minimum number of credit hours to qualify for full-time benefits during his on-campus quarter.

ACADEMIC TERMS AND ACTIONS DEFINED

Quarter Average	Grade Point Average on work attempted during any given quarter.
FTU Average	Grade Point Average on all work attempted while in attendance at Florida Technological University.
Overall Average	Grade Point Average on all work attempted since entering college, including work from all previously attended institutions.
Academic Warning	First action taken when a student's FTU overall GPA drops below 2.0. An FTU student is placed on Academic Warning only once. Subsequent action will be Academic Probation.
Academic Probation	Action taken if a student on Academic Warning does not achieve a 2.0 GPA or better in the subsequent quarter. This action is also taken when a student who has previously been on Academic Warning lets his overall or FTU GPA drop below 2.0. Academic Probation will continue until such time as the current quarter, overall, and FTU cumulative GPA's reach 2.0 or better.
Disqualified	A student on Academic Probation is Disqualified when he fails to achieve a 2.0 GPA during the subsequent quarter. A student who is Disqualified may not enroll at the University for one quarter following disqualification. <i>Readmission after the mandatory one quarter out is not automatic.</i> A disqualified student must apply for readmission. His total record will then be reviewed and action on his readmission taken by the University Admissions and Standards Committee.
Exclusion	If a student is readmitted after an appeal to the Admissions and Standards Committee following disqualification and still fails to achieve a 2.0 GPA, he is excluded from the University. Exclusion implies permanence and has no time limit.
Appeal	Every student has the right to Appeal any of the preceding for academic actions either in person or in writing. The Appeal should be made to the Admissions and Standards Committee. Contact the Director of Admissions for procedure.
Readmission	If a student has dropped out of the University <i>for any reason</i> , he must reapply on the appropriate form 28 days prior to the quarter he wishes to reenter.

First time FTU students may be admitted on either Academic Warning or Academic Probation at the discretion of the Admissions Officer or the Admissions and Standards Committee. Academic Warning and Probation are intended to inform the student making unsatisfactory

progress of his need to alter study habits and to seek additional counseling. Early recognition will indicate to the student and to his parents the possible jeopardy to his academic goals, and will also allow an opportunity to demonstrate acceptable performance. Academic Actions in a previous quarter do not change as a result of an "R" (repeated course) or an "I" (incomplete course) change.

EARNING CREDIT WHILE DISQUALIFIED OR EXCLUDED

A student disqualified or excluded while a Freshman or Sophomore and who subsequently receives an A.A. degree (with a 2.0 average on all college work attempted) from an accredited State of Florida junior college may be readmitted to the university with credit earned accepted in accordance with standard University policies.

A student who attends other colleges or universities following disqualification will be classified as a transfer student and his readmission will be based on his total educational record.

WITHDRAWAL POLICY - From a Course (After Add-Drop Period) or from the University.

In order to withdraw from a course after the add-drop period, the student must have the approval of his faculty advisor and the instructor. Withdrawal forms may be obtained from and must be returned to the Registrar's Office.

A "W" grade will be entered for a student who withdraws prior to the end of the fourth week of classes. A "W" will be entered for a student who withdraws while passing after the fourth week. An "F" will be entered for any student who withdraws while failing after the fourth week. A student who ceases to attend a class or the university without approval at any time prior to the reporting of final grades will receive a grade of "F" in the course or courses so dropped.

Students may not change from credit to audit after the fourth week unless passing the course to be changed.

Students may not withdraw from a class or from the University or change the credit to audit during the last two weeks of any quarter.

These withdrawal policies apply to part-time as well as to full-time students and are effective whether the student withdraws from one course or from the University.

Forms for *Withdrawal in Good Standing* may be obtained at the Registrar's Office and must be returned to the Registrar. When these are signed by designated individuals, the student will be entitled to a status of good standing.

A student leaving the University during or at the end of the quarter with financial obligations to the University unfulfilled (for example, library fines, breakage fees, and so forth) will have the statement *Not in Good Standing* entered on the permanent record.

GENERAL EDUCATION REQUIREMENTS CERTIFICATION

An undergraduate student who has not completed requirements for the Associate of Arts degree and who wishes to transfer to another Florida state university can have his transcript stamped **GENERAL**

EDUCATION REQUIREMENTS MET if he has completed FTU's Basic Environmental Studies Program of 54 quarter hours with a GPA of 2.0 or better. (See page 63 for program outline). FTU will accept a similar statement on transcripts received from Florida community colleges or other institutions in the State University System in lieu of completion of the University's Basic Environmental Studies Program.

STEPS IN THE GRADUATION PROCESS

UNDERGRADUATE AND GRADUATE

A student should apply to the Registrar for graduation before registering for his final quarter of attendance and not later than the last day of the Add-Drop Period for that quarter.

Upon completion of 150 undergraduate quarter hours of course work, the student is notified to report to the Registrar's Office.

1. The student must report to the Registrar's Office to complete an Intent to Graduate Form.
2. The candidate is requested to submit the advisor's copy of the Intent to Graduate Form to his college which will initiate the necessary check sheet for graduation. At the end of the quarter that check sheet will be completed and forwarded to the Dean's office for his approval. It will then be forwarded to the Registrar's Office for inclusion in the Student's permanent folder.
3. Upon the completion of graduation requirements, the student's academic record will be checked by both the Dean of the College and the Registrar. If, for any reason, graduation requirements have not been met, the student will be notified immediately.

Successful completion of the degree requirements stated in the bulletin under which the student has indicated he wishes to graduate (following the rules stated on p. 46) shall constitute a recommendation of the respective college faculty that the degree be awarded, assuming the student is in good standing in the University.

A student must complete all requirements for a baccalaureate or graduate degree no later than the date of the quarter graduation ceremony.

DOUBLE MAJORS (FTU students)

1. **ONE BACHELOR'S DEGREE WITH TWO MAJORS.** Any Florida Technological University student satisfying all requirements for two majors that lead to the same baccalaureate degree will have a single degree awarded, and both majors will be indicated on his permanent record. Majors offered under each degree are listed on pages 47-48. For example, a student who satisfies all requirements for a major in Political Science and for a major in History would be awarded a single Bachelor of Arts degree with the two majors indicated on his permanent record. However, if a student wishes to pursue two majors leading to different baccalaureate degrees (e.g., Psychology which leads to a Bachelor of Arts degree and Biology which leads to a Bachelor of Science degree), he must satisfy the requirements stated below for two bachelor's degrees.
2. **TWO BACHELOR'S DEGREES.** Any Florida Technological University student desiring to obtain two majors which lead to

different baccalaureate degrees must meet the requirements for both majors and earn a minimum of 225 quarter hours. A separate diploma will be awarded for each degree.

SECOND BACHELOR'S DEGREE (TRANSFER STUDENTS)

Graduates from accredited four-year institutions who apply for admission to work toward a second baccalaureate degree at Florida Technological University must meet the regular graduation requirements of the major department and the 45-quarter-hour residency requirement. Students holding the baccalaureate degree from an accredited institution are considered to have completed all Environmental Studies Requirements.

Each student is responsible for reading and understanding the graduation requirements as stated in the catalog under which he plans to graduate.

GRADUATE STUDIES

GENERAL INFORMATION

The Office of Graduate Studies consists of the Associate Vice President for Academic Affairs/Dean for Graduate Studies, an associate Dean for Graduate Studies, and a Graduate Council of appointed representatives from each college and the Faculty Senate. The Office of Graduate Studies is responsible for the establishment and subsequent monitoring of minimum University-wide standards concerning graduate admission and matriculation. It also coordinates the graduate programs of the various colleges of the University. Responsibility for the detailed operation of the various graduate degree programs is vested in the individual colleges.

A listing of graduate degree programs is shown on page 48. For particulars concerning individual graduate programs, consult the index for appropriate page referrals.

The following general information pertains primarily to masters programs. For information concerning cooperative doctoral programs, consult the respective graduate program coordinators in Education and Engineering.

ADMISSION TO GRADUATE STUDIES

APPLICATIONS

Applications for admission to graduate study may be obtained from the Registrar, or from the Dean of the College offering the program. Applications which appear to meet minimum standards for admission are referred to the Dean of the appropriate College for his recommendation. All applications should be submitted to the Admissions Office.

Applications will not be considered without complete official transcripts showing the last 90 hours of undergraduate courses taken for the baccalaureate degree and all graduate work attempted. All transcripts must be received directly from the Registrar of the institution in which the work was attempted.

REGULAR STATUS

To be eligible for consideration as a regular, degree-seeking student, the student must file official transcripts showing degrees earned (a baccalaureate degree being the minimal standard) and any credit beyond the baccalaureate degree, and must meet the following University and program minimum admission requirements:

A. University Admission Requirements

- (1) Either a grade point average (GPA) of 3.0 (4.0 = A) for the last 90 quarter hours credited toward the earned Baccalaureate degree from an accredited institution, or
- (2) Quantitative-verbal GRE score of 1000 or higher. Applicants to the College of Business Administration must submit an ATGSB (or GMAT) score of 450 or higher in lieu of the GRE.

B. Program Admission Requirements

The applicant must be accepted by the department or administrative unit offering the degree program to which the application

is made. In any degree program, admission criteria above and beyond University minimums may be required. In the event enrollment in a program must be limited, additional criteria may be developed beyond those described in this catalog. Prior to submitting an application, students are expected to familiarize themselves with the program admission requirements specified in the respective degree program sections of this catalog (or in supplementary material available from the degree program).

POST-BACCALAUREATE STATUS

Students may be admitted in the post-baccalaureate category under any of three conditions:

- A. Temporarily, because their file is incomplete.
- B. They do not wish to pursue a degree program.
- C. They do not meet the standards for regular admission (or do not maintain their grades as a degree-seeker).

Post-baccalaureate status is not a degree-earning category. Whereas a student may earn credit in any number of courses (subject to whatever limitations the respective programs or the State of Florida may impose), these hours will not necessarily lead to a degree. If a student is, however, subsequently admitted to degree status, up to 12 quarter hours of post-baccalaureate work (see Transfer of Credit) may be considered for transfer into the degree program.

If the student is placed in the post-baccalaureate category because he does not have sufficient grade point average or examination (GRE, ATGSB or GMAT) score, admission to the regular category may be attained only by repeating the examination and making an acceptable score or by being selected for provisional status. Post-baccalaureate hours can not be used to raise an insufficient undergraduate grade point average.

PROVISIONAL STATUS

Individual programs may elect (but are not required) to admit on a provisional basis a very limited number of students who do not meet minimum University admission requirements. Provisional admission is based upon evidence of academic and professional promise. If a course work average of "B" or higher is earned upon the completion of the first 12 quarter hours of graduate program course work, provisional students may then be considered for acceptance into the degree program as regular graduate students. To apply for provisional admission, students should file an application with the appropriate graduate degree program coordinator.

GRADUATE RECORD EXAMINATION/GRADUATE MANAGEMENT ADMISSION TEST (GMAT) REQUIREMENT

Certain graduate programs require all of their applicants to submit scores on the Graduate Record Examination (GRE) or GMAT. Applicants should refer to the appropriate graduate degree program section for their particular requirements. Satisfactory scores on these examinations are determined by the College to which the application is made.

Applicants should write to the Educational Testing Service, Princeton, New Jersey 08540 or contact the FTU Developmental Center for information on the GRE or GMAT testing dates and locations.

SECOND GRADUATE DEGREE PROGRAM

A student who has completed one graduate degree program must secure the approval of the program concerned before undertaking a second graduate program. Work taken without such approval will not count toward a graduate degree.

FLORIDA RESIDENCY (See page 40)

TRANSFER OF GRADUATE CREDIT

Normally, a maximum of nine quarter credits may be transferred from institutions not within the State University System to FTU for application to a Masters program. Up to 12 quarter credits taken as an FTU post-baccalaureate or from another Florida SUS institution may be transferred at the discretion of the degree program upon a petition by the student.

INTERNATIONAL STUDENTS

Applicants from foreign countries whose native language is not English are required to submit scores on the Test of English as a Foreign Language (TOEFL) examination in addition to the GRE or ATGSB/GMAT. These examinations are offered periodically at test centers throughout the world by the Educational Testing Service. The TOEFL Bulletin of Information for Candidates, International Edition and Registration Form are available at American embassies, consulates, offices of the United States Information Service or other U.S. government agencies abroad.

GENERAL REGULATIONS

STUDENT RESPONSIBILITY

The student is responsible for informing himself of all rules, regulations, and procedures required by the Office of Graduate Studies, and the College offering the course or program he is pursuing. Regulations will not be waived or exceptions granted because a student pleads ignorance of the regulation or claims failure of his advisor to keep him informed.

THE TRAVELING SCHOLAR PROGRAM

The University participates in a Traveling Scholar Program, enabling a graduate student to take advantage of special resources available on another campus but not available on his own campus: special course offerings, research opportunities, unique laboratories, and library collections.

A traveling scholar must receive the approval of his own graduate advisor and the appropriate faculty member at the host university, then be formally approved by the graduate deans at the respective institutions.

The scholar will be registered at the host university and pay regular fees there. He will receive a waiver of admission requirements and the application fee of the host university. Credit for work, which is guaranteed, will be recorded at the home university.

Normally, traveling scholars are limited to one quarter of off-campus study. They are not entitled to mileage or per diem payments but

the home university may, at its option, continue its financial support in the form of fellowships or graduate assistantships without any work obligation to be discharged at either university. Appropriate forms are available in the Office of Graduate Studies.

STUDENT'S COMMITTEE

It is the intent that the student's advisor or advisory committee be influential in designing a program of study for the student, providing continual guidance, and be the principal mechanism for evaluation of the student's progress.

Advisors and advisory committees will be appointed by the Dean of the College in cooperation with the Department or appropriate unit in which the student is enrolled. Advisory committees must have at least three (3) members.

STUDENT'S PROGRAM OF STUDY

A total program of study must be established for each student prior to completion of 12 hours of graduate credits or his first quarter of full time work. This program must be developed by the student in cooperation with his advisor or committee and should be approved by the appropriate College Dean. A copy of the program and names of the student's advisor or committee members will be filed with the Office of Graduate Studies prior to the start of the student's second quarter.

COURSE LOADS

Graduate students applying for assistance under Public Law 89-358 (Veterans' Readjustment Benefits Act of 1966) must register for 9 credits per quarter to qualify for certification as a full-time student. Post-baccalaureates must register for 12 credits. Normally, the maximum load for graduate students is 15 quarter hours.

COURSES AND CREDITS

Courses numbered 500-599 are primarily for beginning graduate students. Courses numbered 600-699 are exclusively for graduate students. At least one half of the course requirements of the student's graduate program of study must be at the 600 level. No more than 9 hours of 400 level work may be utilized in a graduate program of study. Courses of 300 level and below may not be utilized in a graduate program of study without prior permission from the Graduate Council.

GRADES AND SCHOLARSHIP

Acceptable grades for students pursuing graduate study are A and B. A student whose GPA falls below this value will normally be dropped from the graduate program. An accumulation of more than nine (9) hours of C, D, F, I work is grounds for automatic dismissal from a degree program.

MAXIMUM HOURS

The Florida Board of Regents (BOR) has established a maximum number of hours for each degree program which a student may accumulate after entering the degree program as a Regular or Provisional graduate student. Any course work taken regardless of

applicability towards the program requirements counts toward the program maximum. See the appropriate program section for the maximum hour limit.

RECENCY OF WORK

Courses completed more than five years prior to the quarter in which the degree is earned may not be used toward meeting degree requirements.

RESIDENCE REQUIREMENTS

At least 33 credits must be earned at FTU. Residence credits may be earned through enrollment in courses offered on campus, at FTU Residence Centers or at other locations where FTU courses are taught by FTU faculty.

REGISTRATION REQUIREMENTS

Students must be registered in any quarter in which FTU faculty or facilities are utilized. Unless the graduate program certifies to the Office of the Registrar that no FTU resources will be utilized, a student **must** be registered in the quarter of graduation.

CREDIT BY EXAMINATION — INDEPENDENT STUDY

Credit by examination may be utilized to satisfy course requirements, but not credit hour requirements. No more than nine (9) hours of independent study credit will be accepted in the program of study.

EXAMINATIONS

An end-of-program (final) comprehensive examination is required of all students. This examination may consist of a thesis defense or an examination of course work material or both.

THESIS-LANGUAGE EXAMINATIONS

Thesis and language examination requirements are at the option of the respective degree programs.

APPLICATION FOR DEGREE

The student must file an Intent to Graduate form in the Office of the Registrar during the first week of the quarter in which graduation is anticipated. If the student then fails to graduate that quarter, the Intent to Graduate form must be refiled in the quarter when graduation is next anticipated.

ACADEMIC PROGRAMS

Each college requires work in the Environmental studies program in addition to its respective curricula.

ENVIRONMENTAL STUDIES PROGRAM

The Environmental Studies Program presents to each student an opportunity to gain an insight into an organized body of knowledge designed to enhance the student's ability to make intelligent decisions in a world of the future. This program provides the student with an acquaintance of many of the major areas of academic inquiry. It permits the student to make a more meaningful choice of a major and provides insights into areas from which he may select courses for elective credit.

ENVIRONMENTAL STUDIES (69)

BASIC PROGRAM (54)

Communications 10

Composition

ENG 101 Composition I (4)

Speech

SPE 101 Fundamentals of Oral Communication (3)

Communications Options

ENG 103 Exploring Literature Through Writing, ENG 202, ENG 208; or Speech course. (3)

CULTURAL AND HISTORICAL FOUNDATIONS* 11-12 (Select one course from each group)

- | | |
|------------|-------------------------------|
| I. HUM 201 | Western Humanities Survey (4) |
| II. ART | ART (3-4) |
| | Any Literature (3) |
| HIST | History (4) |
| HUM | Humanities (4) |
| MUS | Music |
| PHIL | Philosophy (4) |
| REL | Religion (4) |
| THA | Theatre (4) |
| III. HIST | History (4) |

Mathematical Sciences 7-8 (Select any two)

COMP	Any COMP course
PHI 205	Formal Logic I (4)
MATH	Any MATH course
STAT	Any STAT course

Social Sciences* 12-13 (Select from both I & II)

- | | |
|----------------------------|--|
| I. ECON 201 or
202, 203 | Economics Survey (3) or
Principles of Economics (4,4) |
| PCL 201 or 303 | Political Science (4) |
| GEOG 350 or 360 | Social Geography (4) |

*See footnote on page 64.

II. PSY 201, 202	Psychology (4,4)
SOC 201, 202	Sociology (4,4)
SOC 310, 311	Anthropology (4,4)
COM 100	Basic Communication (4)

Scientific Environment (Select from at least two groups)

11-13

I. Biological Sciences (4-8)

Any BIOL, BOT, MICRO or ZOOL courses

II. Earth Sciences (4-8)

CEES 322

Any GEOL courses

GEOG 100, 301

Physical Geography

III. Physical Sciences (4-8)

Any CHEM courses

Any PHYS courses

ENGR 100, 151, 152

*After the completion of a year of foreign language, a student may substitute language for any 4 hours of credit in Cultural and Historical Foundations and 4 hours of credit in Social Sciences. The remaining hours may be used in the General Elective area of the student's major. For placement in language classes, classes, see page 127.

ADVANCED PROGRAM (15)

Business (3)

BADM 301, 302, 371

MGMT 301

Engineering (3)

ENGR 380

ENGR 480 to 489

Education (3)

EDEL 482

EDLS 380

EDTA 480

EDTA 481

ESPE 483

EDVE 381

Electives (Upper Division) (6)

These courses must be selected from a college other than the one in which the student is registered. A General Studies student may select electives from any college.

MAJOR IN GENERAL STUDIES

PURPOSE

The General Studies curriculum is a university-wide general purpose program leading to the Bachelor of Arts in General Studies or Bachelor of Science in General Studies degree. The determination of whether the Arts or Science degree shall be awarded will be determined by the course areas selected.

The program is administered through the office of the Associate Vice President for Academic Affairs and is designed for liberal education and academic flexibility. It recognizes that, apart from the professional curricula, there are many combinations of courses which can be structured into meaningful programs to meet the needs of individual students.

The General Studies program has two main purposes:

1. It accommodates students who desire a liberal, non-professional education encompassing several fields.
2. It provides a means for students to start a productive university education while delaying decision on professional curricula until the sophomore year.

Students who are undecided as to their major may pursue the General Studies program until they can select a specific major area.

Students fulfilling the requirements for a degree in General Studies must complete either the FTU Basic Environmental Studies Program or the General Education requirement at a Florida State Junior College. In addition, 15 quarter hours of Advanced Environmental courses are required as outlined on the previous page.

The General Studies student must complete a minimum of four course area groupings in which at least three colleges are represented. A minimum of 22 quarter hours must be completed in each area with an additional 22 quarter hours to be completed in a fifth area or used to strengthen one or more of the four course area groupings. However, students choosing only four course area groupings may include a maximum of 12 quarter hours of general electives in completing their degree program.

The areas of Business Administration, Education, and Engineering may be used twice provided a specific concentration corresponding to a traditional major is chosen for one of the area course groupings. For example, two areas in Business Administration may be completed using 22 quarter hours in Accountancy and 22 quarter hours in general business courses.

In addition to the University-wide degree requirements shown on page 46 a minimum grade point average of 2.0 must be achieved in each course grouping.

COURSE AREA GROUPINGS

AIR FORCE ROTC

S.S.**

For students who take and complete the Air Force R.O.T.C. four year or two year upper division programs.

ALLIED HEALTH SCIENCES

N.S.**

Allied Health Sciences, Medical Record Administration, Medical Technology, Nursing, Respiratory Therapy and other Health Related Professions.

BEHAVIORAL SCIENCES

S.S.**

Anthropology, Psychology, Sociology, and Social Welfare.

BIOLOGICAL SCIENCES

N.S.**

Biology, Botany, Microbiology, and Zoology.

BUSINESS ADMINISTRATION

B.A.**

Accounting, Business Administration, Economics,‡ Finance, Management, Marketing, and Quantitative Business Analysis.

COMMUNICATIONS

S.S.**

Journalism, Radio-Television, Speech and general courses in Communications.

EDUCATION***E.D.****

Business Education, Library Science, Physical Education, Teaching Analysis, Vocational Education and selected courses from Elementary and Secondary Education.

ENGINEERING**ENGR.****

Selected courses from the Engineering core and departmental offerings. A maximum of 9 quarter hours from Engineering Interdisciplinary Courses may be used in the Environmental Studies and General Studies program.

FINE ARTS**H.F.A.****

Art, Music, and Theatre.

HUMANITIES**H.F.A.****

English, Foreign Literature, History, Humanities, Philosophy, and Religion.

LANGUAGES**H.F.A.****

French, German, Italian, Russian, Spanish.

MATHEMATICAL SCIENCES**N.S.****

Computer Sciences, Mathematics, and Statistics.

PHYSICAL SCIENCES**N.S.****

Astronomy, Chemistry, Forensic Science, Geography (Physical), Geology, Physics, and general courses in the Earth and Space Sciences.

SOCIAL SCIENCES**S.S.****

Allied Legal Services, Criminal Justice, Economics,‡ Geography (Social), Political Science, and Public Administration.

‡This course shown in two areas.

*Consult your advisor. Many ED courses require concurrent public school practicum.

**The current six colleges are: Business Administration (B.A.); Education (ED.); Engineering (ENGR.); Humanities and Fine Arts (H.F.A.); Natural Sciences (N.S.); and Social Sciences (S.S.).

COLLEGE OF BUSINESS ADMINISTRATION

UNDERGRADUATE PROGRAMS

ACCOUNTANCY
BUSINESS ADMINISTRATION
ECONOMICS
FINANCE
MANAGEMENT
MARKETING

GRADUATE PROGRAMS

ACCOUNTANCY
BUSINESS ADMINISTRATION
ECONOMICS
MANAGEMENT



COLLEGE OF BUSINESS ADMINISTRATION

DEAN: *C. Eubanks*, CB 210, Phone 275-2181
ASSISTANT DEAN (Acting): *W. Bogumil*, CB 420, Phone 275-2636

The goal of the College of Business Administration is to assist in the maximum development of the individual potential for accomplishment as a person and as a responsible member of society by preparing students for entry into managerial or professional positions in business and government.

Graduates of the College of Business Administration may pursue a wide variety of careers in business and industry, and in government. The various programs of study offered by the College are designed to assist the student in obtaining a sound academic preparation for the career of his choice.

The degree Bachelor of Science in Business Administration with the following majors is offered by the College of Business Administration:

Accountancy	Finance
Business Administration	Management
Economics	Marketing

AREA REQUIREMENTS FOR GRADUATION

Program area hour requirements specified for graduation by the College of Business Administration include Basic Environmental Studies (54), Advanced Environmental Studies (15), Common Body of Knowledge (48-49), major area requirement (27-33), major area electives, and general electives.

ENVIRONMENTAL STUDIES PROGRAM (69)

The Environmental Studies Program for the College of Business Administration is similar to the general requirements for all students of the University. The College specifically recommends a number of courses for inclusion as part of the Environmental Studies Program. It is strongly suggested that students consult with an advisor in the College of Business Administration before embarking on a course of study.

Students in the College of Business Administration cannot receive credit for the following courses: BADM 301, BADM 302 and ECON 201.

COMMON BODY OF KNOWLEDGE (48-49)

The common body provides foundation courses in each of the major areas of business administration as a platform from which the student builds his major course of study.

LOWER DIVISION

ACCY 211, 212	Financial Accounting	3, 3/5
	or 300	
ECON 202	Microeconomics	4
ECON 203	Macroeconomics	4

UPPER DIVISION

ACCY 305	Managerial Accounting	3
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BADM 303	Business Information Systems	3
BADM 324	Business Operations Management	3
BADM 371	Legal Environment of Business	3
ECON 321	Quantitative Methods and Business Decision Analysis	4
FIN 301	Finance	5
MGMT 301	Management and Organization Behavior	3
MGMT 311	Human Behavior and Interpersonal Relations	3
MKTG 301	Marketing	5
ECON 401 ¹	Managerial Economics	3
BADM 485	Business Policies	4

GRADE POINT AVERAGE REQUIREMENTS

For graduation the student must have maintained a minimum 2.0 GPA in course work taken in the College of Business Administration and a minimum 2.0 GPA in the course work in the major.

STUDENT LOAD — MAXIMUM

A student who is enrolled in 15 quarter hours of course work is considered to be carrying a normal academic load. Students desiring to take 19 or more quarter hours of course work must obtain permission from the chairperson of their major area department.

COMMUNITY/JUNIOR COLLEGE TRANSFERS

Community/Junior College students who plan to transfer to the College of Business Administration at Florida Technological University are advised to:

1. Complete the entire university-parallel program at the Community-Junior College (the Associate of Arts Degree) including:
 - A. the general education requirements prescribed by the Community/Junior College.
 - B. the one-year accounting and economics sequences (sophomore year).
 - C. a course in College Algebra
 - D. a course in Statistics
 - E. a course in Business Law
2. Avoid the following professional courses: Principles of Management, Principles of Marketing, Principles of Finance, and similar courses. These professional courses are available only as third and fourth year courses in the College of Business Administration and consequently cannot be satisfied with Community/Junior College courses.

¹ECON majors will take ECON 301 in lieu of ECON 401; other majors may substitute ECON 301, 311, 341, 421, 431, 441, or FIN 331; BADM majors may not substitute ECON 431.

DEPARTMENT OF ACCOUNTANCY

Chairman: C. Avery, CB 436, Phone 275-2463

Faculty: Busch, Bussman, Causey, Johnson, Marquardt, Salter, Wood

Accountancy is usually selected as a major by the student who is preparing for industrial, governmental, or public accounting, or who wishes to use accountancy as general training for a career in business.

The size and nature of the organization determines the scope of the industrial accountant's activities but, broadly defined, the following duties are illustrative: design and installation of accounting systems, preparation of financial statements and reports, cost accounting, internal auditing, interpretation and analysis of budgets, and preparation of tax returns.

The principles which underlie governmental accounting are, in general, aimed at meeting certain legal requirements, based on the public nature of the activity. These activities include the operations of governments and sub-divisions thereof, such as national and state governments, counties, cities, villages, and park and school districts.

In today's complex society, the Certified Public Accountant performs a specialized professional service which is indispensable to investors, bankers, businesses and governmental units of all sizes. As the needs of these fields have grown, the CPA's profession has broadened its dimensions to keep pace. The CPA's best known function is to audit—or, to conduct an objective examination and analysis of a company's financial statements for the purpose of expressing his independent opinion as to whether or not the statements fairly present the organization's financial position and results of operations.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: ACCOUNTANCY

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses
 - a. Business Common Body of Knowledge (48-49 hours)
 - b.

ACCY 314	Introduction to Accounting Theory and Practice	3
ACCY 315	Intermediate Accounting I	5
ACCY 316	Intermediate Accounting II	5
ACCY 325	Cost Accounting	4
ACCY 425	Cost Analysis	4
ACCY 430	Auditing	5
ACCY 450	Federal Income Tax Accounting	5
ACCY 475	Current Selected Topics	2
 4. Restricted Electives
Not more than 36 hours of credit in Accountancy beyond the College common body of knowledge requirement may be counted in the 180 quarter hours for graduation.
 5. Electives
- Total Quarter Hours Required 180

DEPARTMENT OF BUSINESS ADMINISTRATION

Chairman: *R. Reidenbach*, CB 417, Phone 275-2108

Faculty: *Manske, Schou, Stone*

Business Administration is normally selected as a major by those students who do not wish to concentrate in a specialized or functional field within the major disciplines offered by the College of Business Administration. Instead the student is encouraged to take advantage of the opportunity to select from any of the areas which interest him, thereby making the program a highly flexible one which is also extremely broad in content.

The curriculum contains a large number of elective options which when coupled with the basic courses required of all students in the College, will give the student a breadth of understanding so as to enable him to take advantage of the multitude of opportunities found outside of a specialized field.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: BUSINESS ADMINISTRATION

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses
 - a. Business College common body of knowledge (48-49 hours)
 - b. ECON 431 Public Finance in the American Economy 4 hours
 - FIN 321 Investments
 - or
 - FIN 331 Money and Banking 4 hours
 - or
 - FIN 351 Financial Institutions
 - MGMT 364 Personnel Management 4 hours
 - MGMT 480 Planning and Control 4 hours
 - MKTG 384 Marketing Research 5 hours
 4. Restricted Electives
At least two additional courses from a minimum of two areas in the College of Business Administration.
 5. Electives
- Total Quarter Hours Required 180

DEPARTMENT OF ECONOMICS

Chairman: (Acting) *R. Hicks*, CB 444, Phone 275-2465

Faculty: *David, Klages, Raffa, Shockley, Slemmer, White, Winchester, Xander*

The discipline of economics is defined in several ways. It is most frequently described as the study of how man uses limited resources to satisfy his wants. Within this framework, the economist is concerned with (1) the functioning of the economy as a whole and (2) the functioning of individual units within the economy, particularly the business firm and the consumer. Many important fields are covered in the study of economics, including economic theory, labor, international trade, economic history, agriculture, quantitative analysis, public utilities, economic systems, economic development, public finance, business and government, and urban economics.

The economics courses required of all students in the College of Business Administration are designed to provide a sound grasp of tools of analysis and measurement, as well as the ability to apply systematic analysis to problems of business policy. A major in economics prepares the student for a variety of careers in business, industry, and government.

Although all of the economics courses are administered and offered by the College of Business Administration, a student majoring in economics may earn either a Bachelor of Science in Business Administration degree in the College of Business Administration or a Bachelor of Arts degree in the College of Social Sciences. There are significant

differences in these two degree programs. The Bachelor of Science in Business Administration degree student must complete the College common body of knowledge. The Bachelor of Arts degree requirements are listed in the College of Social Sciences section of this catalog.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: ECONOMICS

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

a. Business	College common body of knowledge (48-49 hours)	
b. ECON 301	Intermediate Price Theory	4 hours
ECON 311	Intermediate Money, Income and Employment Theory	4 hours
ECON 431	Public Finance in the American Economy	3 hours
FIN 331	Money and Banking	4 hours
4. Restricted Electives
All economics majors will be required to take five electives beyond the major required economic courses of 301, 311, 431, and FIN 331.

Specialization:

Economics major may have a concentration in any economics area offering sufficient courses including quantitative courses.

Not more than 32 quarter hours of credit in Economics beyond the College common body of knowledge requirements may be counted in the 180 quarter hours required for graduation.

5. Electives:

Total Quarter Hours Required	180
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MAJOR IN FINANCE

Contact Person: *W. Reiff, CB 443, Phone 274-2465*

Faculty: *Brewer, Budina, Hitt, Millican*

The program in finance is designed to provide the student with a broad knowledge in the areas of business and corporation finance and investments. The program provides the student with the theoretical background and the tools of analysis required for making effective judgments in finance.

Business and corporation finance emphasizes the institutions and instruments through which short-term and long-term capital may be obtained and the management of funds in the individual firm.

The area of investments includes an analysis of various outlets for investment funds, such as stocks and bonds, an examination of the factors affecting those outlets, and an inquiry into the elements of investment decisions and portfolio management.

The study of finance prepares the student for careers in business financial management and with financial institutions. Commercial banks, savings and loan associations, insurance companies, and investment firms represent some of the financial institutions seeking the student who majors in finance.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: FINANCE

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses
 - a. Business College common body of knowledge (48-49 hours)
 - b. FIN 321 Investments 4 hours
 - FIN 351 Financial Institutions 4 hours
 - FIN 361 Financial Models 4 hours
4. Restricted Electives
(Select 4 courses)

FIN 311	Risk and Insurance	4 hours
FIN 331	Money and Banking	4 hours
FIN 341	Real Estate	4 hours
FIN 352	Commercial Bank Administration	4 hours
FIN 421	Security Analysis	4 hours
FIN 431	Financial Management	4 hours
FIN 461	Portfolio Management	4 hours

Not more than 32 quarter hours of credit in Finance beyond the College common body of knowledge may be counted in the 180 quarter hours required for graduation.

5. Electives:
- | | |
|------------------------------|-----|
| Total Quarter Hours Required | 180 |
|------------------------------|-----|

MAJOR IN MANAGEMENT

Director of the Program: W. Callarman, CB 410, Phone 275-2378

Faculty: Berry, Bogumil, Comish, Eubanks, Gallagher, Jones, Martin, Roush, Wilkinson, Wilson

The study of management includes an investigation into the areas of organization theory, personnel management, and production management. An understanding of organizations and the process by which they develop and influence behavior is important to the study of management.

Organization theory focuses on the organization as a social system and the forces which affect this system, and includes behavior of individuals in groups, economic conditions and technology. Personnel management and industrial relations are concerned primarily with the effective utilization of human resources within the business organization.

The major concern of production management is the effective utilization of material resources. The manager specializes in the efficient utilization of the organization's resources. The design, improvement, and coordination of the business processes with other activities are primary concerns.

A student majoring in management may find a wide variety of career opportunities in business, industry, or government.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: MANAGEMENT

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses
 - a. Business College common body of knowledge (48-49 hours)
 - b.

MGMT 364	Personnel Management	4 hours
MGMT 401	Organization Theory	4 hours
MGMT 402	Decision Systems Analysis	4 hours
MGMT 424	Production Management Problems	4 hours
MGMT 465	Industrial Relations	4 hours
MGMT 480	Planning and Control	4 hours
COM 311	Business and Professional Communication	4 hours
4. Restricted Electives

ECON 331	Economics of Labor	3 hours
FIN 431	Financial Management	4 hours
MGMT 466	Human Relations	4 hours
MKTG 367	Sales Management	4 hours

Not more than 32 quarter hours of credit in Management beyond the College common body of knowledge requirement may be counted in the 180 quarter hours required for graduation.

5. Electives:
- | | |
|------------------------------|-----|
| Total Quarter Hours Required | 180 |
|------------------------------|-----|

MAJOR IN MARKETING

Contact Person: *E. Teeple*, CB 410, Phone 275-2108

Faculty: *Fuller, McAleer, Rubin*

Marketing encompasses the total system of interacting business activities designed to plan, price, promote, and distribute want-satisfying products and services to present and potential customers.

The marketing curriculum concentrates on developing the student's ability to understand, interpret, and measure market demand and to understand the blending of product differentiation, pricing strategies, promotional strategies, and physical distribution so as to optimize the efficiency of the total system and the profits of the individual firm.

Students majoring in marketing find career opportunities in the areas of advertising, sales promotion, sales management, industrial sales, purchasing, marketing research, product planning, physical distribution, and other related management positions. This type of career opportunity may be found in the manufacturing, transportation, communication, public utility, wholesale trade, retail trade, finance, insurance, real estate, construction, mining, agriculture, service or other industries. Opportunities are also available in education and government.

BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION: MARKETING

Degree Requirements

1. University graduation requirements
(See page 46)

2. Environmental Studies Program
(See page 63)
3. Required Courses
 - a. Business College common body of knowledge (48-49 hours)
 - b.

MKTG 326	Consumer Market Behavior	4 hours
MKTG 367	Sales Management	4 hours
MKTG 384	Marketing Research	5 hours
MKTG 485	Marketing Policies and Strategies	4 hours
4. Restricted Electives
Minimum of 3 courses with a maximum of one in PSY, COM area

BADM 444	International Business Operations	4 hours
MKTG 334	Marketing Models and Logistics	4 hours
MKTG 364	Advertising Management	4 hours
MKTG 469	Channels of Distribution Management	4 hours
MKTG 489	Current Marketing Problems	4 hours
PSY 300, 308, or COM 311		4 hours

Not more than 32 quarter hours of credit in Marketing beyond the College common body of knowledge requirements may be counted in the 180 quarter hours required for graduation.
5. Electives

Total Quarter Hours Required

180

COLLEGE OF BUSINESS ADMINISTRATION GRADUATE PROGRAMS

The College of Business Administration offers curricula leading to the Master of Business Administration degree, the Master of Science in management degree, the Master of Science in accountancy degree and the Master of Arts degree in Economics. The graduate programs are conducted under the direction of a faculty committee on graduate study.

Students may start the program during any quarter. Graduate courses are available in the afternoon and evening. The day program is designed primarily for full-time students and the evening program is scheduled for part-time students.

ADMISSION REQUIREMENTS

1. University Admission Requirements
(See pages 46 and 58)
2. College Admission Requirements
 - a. General Admission: Admission is open to the student with a baccalaureate degree from an accredited college or university, with a minimum of 3.0 grade point average (based on a 4.0 system) while registered as an upper division undergraduate student and an acceptable score on the Graduate Management Admission Test (GMAT — 450 with a minimum of 23 on the verbal portion) or an acceptable score on the Graduate Record Examination (GRE — 1000) for the Master of Arts degree in Economics. Students who are deficient in one of these requirements may petition for special consideration.

Such consideration will be based on the applicant's intellectual development during the course of his previous academic career, his extracurricular activities, employment experience, and other evidences of motivation for graduate study. No previous academic training in business is required, thus the four Master degree programs are open to graduates in education, engineering, arts, science, and other fields as well as business. The applicant will not be considered for regular graduate status until his score on the GMAT or GRE, a transcript showing proof of attainment of the Bachelor's degree and the transcripts of all other colleges attended have been submitted to the Director of Admissions of the University. The applicant must arrange for transcripts to be submitted by the proper officials of the institutions which he attended. Transcripts in the possession of an applicant cannot be accepted. It is the applicant's responsibility to make arrangements to take the GMAT or GRE and to direct the Educational Testing Service to mail the test score to the Director of Admissions, Florida Technological University.

- b. **Personal Interview and Enrollment:** A personal interview with the Coordinator of the graduate programs, in connection with the application for admission is desirable. Personal interviews may be arranged through the Office of Graduate Programs, College of Business Administration.

Enrollment in graduate courses is limited to students who have been accepted in one of the admission categories for the MBA, MSm, MSa and MAE programs. Students who apply too late to take the Graduate Management Admission Test may be required to register for prerequisite undergraduate courses only. An exception may be made for a student ranking in the upper 10% of his undergraduate class. The College of Business Administration office must have the student's application for admission on file prior to the registration for the prerequisite courses.

UNIVERSITY GRADUATE POLICIES AND PROCEDURES

See pages 46 and 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

MASTER OF BUSINESS ADMINISTRATION

Program Coordinator: *J. Winchester*, CB 410, Phone 275-2376

The program of study for the Master of Business Administration degree is primarily concerned with the advanced study of broad business concepts and relationships. The purposes are (a) to develop depth of knowledge of the business functions, (b) to strengthen the analytical tools of the individual for use in research necessary to resolve business problems, (c) to expose the student to decision-making concepts and practices, and (d) to encourage a logical approach to the resolution of business problems.

Degree Requirements

1. **Prerequisites:** The following prerequisites should be completed before a student may enroll in required/elective graduate courses. Quarter hours are shown in parentheses.

ACCY 211, 212	Financial Accounting I and II (3, 3)
or	
ACCY 300	Financial Accounting (5)
or	
ACCY 501	Financial Accounting Concepts (4)
BADM 371	Legal Environment of Business (3)
or	
BADM 501	Business Environment and Business Law (3)
ECON 202	Principles of Microeconomics (4)
ECON 203	Principles of Macroeconomics (4)
or	
ECON 501	Economic Concepts (4)
STAT 301	Fundamentals of Probability and Statistics, (4)
	or Calculus
and	
ECON 321	Business and Economic Statistics (4)
or	
ECON 521	Statistics for Business and Economics (4)
FIN 301	Finance (5)
or	
FIN 501	Financial Concepts (4)
MGMT 301	Management and Organizational Behavior (3)
and	
BADM 324	Business Operations Management (3)
or	
MGMT 501	Management and Production Concepts (4)
MKTG 301	Marketing (5)
or	
MKTG 501	Marketing Concepts (4)

Students completing their last prerequisite course(s) may register for graduate courses in the same quarter with the permission of the Coordinator of the graduate program.

Prerequisite courses must have been completed with a minimum grade of "B" within the past five years at an accredited college or university. Prerequisites may be satisfied through completion of the equivalent foundation course or through credit by examination.

2. Core Courses: The following courses are required.

ACCY 601	Accounting Analysis	3 hours
BADM 601	Operations Research Models for Business	3 hours
BADM 611	Systems Analysis for Business	
	Problem Solving	3 hours
BADM 621	Business Policy and Responsibility	3 hours
BADM 695	Research Methods	3 hours
ECON 601	Economic Analysis of the Firm	3 hours
ECON 621	Statistical Models for Business	3 hours
FIN 601	Capital Management and Analysis	3 hours
FIN 611	Financial Management of	
	Current Operations	3 hours
MGMT 601	Planning and Control Analysis	3 hours
MGMT 611	Analysis of Organizational Behavior	3 hours
MKTG 601	Marketing Policy	3 hours

36 hours

3. Restricted Electives: Each student will complete at least nine hours of approved electives from 600 level courses. Students may make selections from any 600 level offerings in the College of Business Administration, or, by petition, certain graduate courses

which may be open to them in other colleges and approved by the College of Business Administration. A graduate elective course may be substituted for one graduate required course in the student's major if the student has completed a baccalaureate degree in Business Administration within the previous five years.

4. **Thesis/Research Report:** No thesis is required for the MBA degree. A student may petition to accomplish an independent study for three hours of elective graduate credit (BADM 694) or a major research project and written report for six hours of elective graduate credit (BADM 697-698). The research project will include the statement, exposition and resolution of a hypothesis in an area of Business Administration by means of a critical and analytical review of existing literature or through primary research.
5. **Examinations:** Satisfactory completion of a written comprehensive examination is required for the MBA degree. The two hours comprehensive examination on the major areas of study normally will be taken during the eighth week of the final quarter of required course work.
6. **Other Requirements:** None Specified.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	65
(see pages 61-62)	

MASTER OF SCIENCE: ACCOUNTANCY

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

The Master of Science in accountancy stresses the development of advanced accounting skills to provide resources for decision making and problem solving in public, private and government accounting. Course work is practice oriented, emphasizing quantitative techniques and computer skills. Courses offered within the MSa core program have received approval from the State Board of Accountancy and satisfy all requirements of Rule 21A-8.03 (5th year in accountancy) and Rule 21A-13.03 (professional education).

Degree Requirements

1. **Prerequisites:** The following prerequisite accounting courses should be completed in addition to the prerequisites listed for the MBA program and BADM 485 Business Policies (4) or BADM 621 Business Policy and Responsibility (3) for graduate elective credit.

Prerequisite Undergraduate Accounting Courses:

ACCY 211, 212	Financial Accounting I, II (3,3)
or	
ACCY 300	Financial Accounting (5)
ACCY 310	Systems Concepts and Management Accounting (5)
ACCY 311, 312	Intermediate Accounting (5,5)
ACCY 320	Cost Accounting (5)
ACCY 410	Advanced Accounting (5)
ACCY 430	Auditing (5)
ACCY 450	Federal Income Tax Accounting (5)

Foundation courses must have been taken at an accredited institution with the student earning a grade of "C" or higher.

2. Core Courses: The Master of Science in accountancy is awarded upon satisfactory completion of a graduate program of 45 quarter hours; 39 hours in the core and 6 hours of graduate elective courses. The required graduate courses for the MSa program are as follows:

ACCY 610	Contemporary Accounting Theory	5 hours
ACCY 612	Computers and Information Systems in Accounting	5 hours
ACCY 620	Advanced Auditing	5 hours
ACCY 630	Cost Accounting for Management Decisions	5 hours
ACCY 640	Taxation	5 hours
ACCY 650	Specialized Accounting Problems	5 hours
ACCY 695	Reserach Methods	3 hours
or		
BADM 695		
ECON 601	Economic Analysis of the Firm	3 hours
ECON 621	Statistical Models for Business	3 hours

39 hours

3. Restricted Electives: Six hours of graduate course work approved by the College of Business Administration.
4. Thesis: The MSa does not require a thesis. However, students wishing to do research may choose among the following options: (1) independent study; (2) a major research project and written report for 6 hours credit (BADM 697-698); or (3) a thesis for a maximum of six elective graduate credits.
5. Examinations: Satisfactory completion of a comprehensive examination is required.
6. Other Requirements: None specified.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	65
(see pages 61-62)	

MASTER OF ARTS: ECONOMICS

Program Coordinator: J. Winchester, CB 410, Phone 275-2376

The program of study for the Master of Arts Degree in Economics is designed to provide the necessary specialization in economics for those desiring careers in the academic, governmental, business, and financial communities.

Degree Requirements

1. Prerequisites: The following prerequisites should be completed before enrolling in the graduate courses. However, a graduate course may be taken if there are no undergraduate prerequisites.

ECON 301	Intermediate Price Theory (4)
ECON 311	Intermediate Money, Income and Employment Theory (4)

It is desirable for the student to have completed the above undergraduate courses prior to beginning graduate work as they are prerequisites to some of the graduate courses. However, students may register in the same quarter for prerequisite and graduate courses which require no prerequisites.

Prerequisite courses must have been completed with a grade of "C" or higher within the past five years at an accredited college or university.

2. Core Courses:

ECON 602	Price Theory	5 hours
ECON 612	Macroeconomic Theory	5 hours
ECON 622	Statistical Analysis of Economic Data	5 hours
ECON 695	Research Methods	
or		
BADM 695		3 hours
		18 hours

3. Restricted Electives: At least eighteen hours may be taken from elective courses offered by the Department of Economics. Up to nine hours of graduate credit may be accepted from other recognized programs upon approval of the Department.
4. Thesis: Required—may not exceed nine hours of graduate credit.
5. Examinations: Satisfactory completion of a comprehensive examination consisting of an oral defense of the thesis.
6. Other Requirements: None specified.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	65
(see pages 61 and 62)	

MASTER OF SCIENCE IN MANAGEMENT

Program Coordinator: *J. Winchester*, CB 410, Phone 275-2376

The purpose of the MSm degree is to provide students with a broad understanding of business administration in which the experience and knowledge gained from in-depth research required by the thesis in one area of management is an integral part.

Degree Requirements

1. Prerequisites: Same as for the MBA program.
(see page 76)
2. Core Courses: In addition to the prerequisites, a minimum of 45 quarter hours of graduate study is required for the Master of Science in management degree. Required graduate courses for the MSm program are identical to the 36 hours of required course work for the MBA program.
3. Restricted Electives: None Specified.
4. Thesis: Specialization for the Master of Science in management will be achieved through the research required in an area of management to prepare a satisfactory thesis. Nine hours of credit (MGMT 699) are granted for the thesis.
5. Examinations: Satisfactory completion of a comprehensive examination consisting of an oral defense of the thesis.
6. Other Requirements: None specified.

COLLEGE OF EDUCATION

UNDERGRADUATE PROGRAMS

**COMPREHENSIVE K-12
LIBRARY MEDIA
PHYSICAL EDUCATION
VISUAL ARTS**

ELEMENTARY

SECONDARY

**BIOLOGY
BUSINESS EDUCATION
CHEMISTRY
ENGLISH LANGUAGE ARTS
FOREIGN LANGUAGE
MATHEMATICS
PHYSICS
SOCIAL SCIENCES
SPEECH**

GRADUATE PROGRAMS

**ADMINISTRATION/SUPERVISION
COMPREHENSIVE K-12
ELEMENTARY
GUIDANCE
SECONDARY**

DOCTORAL PROGRAMS (FTU-FAU)

**ADMINISTRATION AND SUPERVISION
CURRICULUM AND INSTRUCTION**



COLLEGE OF EDUCATION

Dean: C. Miller, CB 202, Phone 275-2366
Associate Dean: R. Cowgill, CB 202, Phone 275-2366
Assistant Dean: N. McLain, CB 303, Phone 275-2436

The College of Education is organized as a professional college within the University. Each student who is planning a career in teaching in the elementary or secondary schools should enroll in this College. Programs are offered leading to the Bachelor of Arts degree, the Master of Education degree and the Master of Arts degree in Education.

The academic program is primarily concerned with three broad areas: Environmental Studies, Specialized Preparation and Professional Preparation. All of these areas are interrelated and interdependent.

The Environmental Studies requirements are designed to provide a broad foundation for each individual. These courses are offered by each of the colleges.

In general, specialized preparation in subject matter areas for secondary education majors is offered by the University's other colleges, while specialized elementary education content courses are offered by the College of Education. All programs are developed in cooperation with the other colleges within the University.

The professional sequence is the responsibility of the College of Education and is designed to:

- A. Give insights into the processes of school curriculum and organization.
- B. Present an opportunity for the student to understand how learning takes place, as well as furnish him with methods and procedures needed for successful teaching.
- C. Develop an understanding of the society in which the school functions.
- D. Build an awareness in the individual of his relationship with students and the community.
- E. Provide significant prestudent-teaching experiences and a culminating student-teaching experience near the end of his program.
- F. Stimulate each individual toward the realization of the challenges and responsibilities in the field of education and begin the development of a basic philosophy of education.

Considerable emphasis is given to providing all education majors with an opportunity to have cooperatively planned learning experiences in a laboratory setting. The laboratory experiences are specifically designed to blend realistic practical experience with theoretical knowledge. In most instances elementary and secondary schools in Central Florida serve as educational laboratories for the students of the College of Education.

Program design will continue to change as evaluation and research determine the advisability of change in reference to the student's personal and academic needs.

UNDERGRADUATE CAREER TEACHER PROGRAM

The Career Teacher Programs are designed to lead to the Bachelor of Arts degree. Students are encouraged to enroll in the College of Education as early as the freshman year. Junior transfer students will enter Phase I of the professional education sequence during the first quarter in which they enroll.

The Career Teacher Program consists of three distinct Phases:

PHASE I—TEACHING ANALYSIS

This phase is required of all education majors and designed to acquaint the student with basic teaching procedures, pre-instructional planning, phases of performance evaluation, and the developmental-behavioral characteristics of children. Various aspects of the teaching profession are analyzed. Experiences will provide the student a basis for deciding whether or not to pursue teaching as a career. Any university student in good standing who qualifies for sophomore courses may enroll in Phase I.

PHASE II—DEVELOPMENTAL

Developmental activities are structured to provide the prospective teacher opportunities to develop specific teaching skills and to expand his teaching field knowledge. Included are analysis of evaluation practices, school curricula, learning theory, special instructional techniques, and variables which affect classroom environment. Laboratory experiences in Phase II are jointly planned by public school personnel and university faculty. These student-teaching experiences will occur in Teacher Education Centers which are selected public elementary or secondary schools. To be admitted to Phase II a student must have an overall 2.0 academic average, have successfully completed Phase I requirements, and must demonstrate competency in written and oral communication skills.

PHASE III—APPLICATION

In Phase III the student applies the fundamentals of teaching and academic knowledge attained in Phases I and II. Under the supervision of a selected teacher, the student is responsible for developing and executing plans. A full quarter is devoted to student-teaching. Concurrent enrollment in the seminar, Teaching Strategies, is required. To be admitted to Phase III, a student must have satisfied the requirements for Phase I and Phase II; have a 2.2 average in his area of academic specialization; a 2.0 overall average; be recommended by the Phase II Teaching Team; and be accepted by the office of the Professional Laboratory Program. An application for Phase III, Student Teaching must be submitted no later than October 1 for the Winter Quarter; January 15 for the Spring Quarter; and April 5 for the Fall Quarter.

CERTIFICATION FOR TEACHING

All College of Education curricula are designed to fulfill the State of Florida certification requirements. Upon application to the State Department of Education a graduate may be issued a Rank III Florida Teaching Certificate. In addition, there is an "interstate" agreement with several states for those College of Education graduates who desire to teach outside of Florida. Check with the Dean, College of Education, or Florida Department of Education for information.

DEPARTMENT OF ELEMENTARY EDUCATION

Chairman: *R. Martin*, CB 317, Phone 275-2161, 275-2162.

Faculty: *Anderson, Bird, Cox, Esler, Green, Haughee, Hynes, Merritt, Midgett, Monteleone, Olson, Palmer, Poe, Thompson*

The career Elementary Education Program is planned for students interested in the development and education of young children, six through twelve years of age. Students who major in elementary education are qualified to teach grades one through six upon graduation and receipt of a Florida teaching certificate.

An elementary education major must have a broad general education (environmental studies—69 quarter hours); a specialized knowledge of content, techniques and materials needed to teach different elementary school subjects such as art, language arts, mathematics, music, physical education, science and social sciences (43 quarter hours); and pursue professional study in a cluster of courses and experiences designed to prepare prospective teachers to effectively work with young children (38 quarter hours).

Professional study includes planned laboratory activities which provide for the application and synthesis of theoretical learnings and development of teaching competencies. Laboratory experiences in Teacher Education Centers are scheduled concurrently with selected required courses during two quarters of the junior year (Phase II). The culminating field experience of a student's program is senior year student teaching (Phase III).

BACHELOR OF ARTS: ELEMENTARY EDUCATION

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)

3. Required Courses

EDEL 301	Teaching Mathematics in the Elementary School	3 hours
EDEL 302	Mathematics Programs in the Elementary School	3 hours
EDEL 306	Music in the Elementary School	4 hours
EDEL 307	Literature for Children	4 hours
EDEL 312	Reading in the Elementary School	3 hours
EDEL 315	Teaching Science in the Elementary School	3 hours
EDEL 317	Teaching Social Sciences in the Elementary School	3 hours
EDEL 405	Language Arts in the Elementary School	4 hours
EDEL 406	Art in the Elementary School	4 hours
EDEL 407	Classroom Diagnosis and Treatment of Reading Difficulties	3 hours
EDEL 408	Science Programs in the Elementary School	3 hours
EDEL 409	Social Science Programs in the Elementary School	3 hours
EDEL 415	Teaching Elementary School Health and Physical Education	3 hours

Phase I		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
Phase II		
EDEL 311	Basic Foundations of Reading	3 hours
EDPL 320	Elementary School Student Teaching— Block A	3 hours
EDPL 321	Elementary School Student Teaching— Block B	3 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
Phase III		
EDEL 316	Elementary School Curriculum	3 hours
EDPL 421	Elementary School Student Teaching— Block C	9 hours
EDPL 408	Teaching Strategies	3 hours
4. Restricted Electives (Area of Academic Concentration)		
A minimum of 12 quarter hours is required in a related field of academic concentration. These courses should be used to provide supplementary teaching field concentration designed to enhance over-all proficiency and teaching skill. Elementary Education majors are advised to select courses leading to certification to teach English, mathematics, social sciences, or sciences in the junior high school, which also may increase employability in a middle school or departmentalized elementary school; or Early Childhood Education; or in the intellectual disabilities area of Exceptional Child Education.		
5. Electives		
Total Quarter Hours Required		180

AREAS OF SPECIALIZATION

1. Early Childhood Education (Nursery and Kindergarten). In combination with preparation to teach grades one through six, requirements may be met for preparation/certification to teach kindergarten (9 quarter hour minimum).

EDEL 460	Principles and Programming in Early Childhood Education	4 hours
EDEL 461	Curriculum in Early Childhood Education	4 hours
EDEL 462	Creativity in Nursery-Kindergarten Education	4 hours
2. Exceptional Child Education (Educable Mentally Retarded). In combination with preparation to teach grades one through six, a specialization is available which is concerned with knowledge, methods, and materials essential to teach children with intellectual disabilities (EMR). Completion of the combined program qualifies a student for certification in each area.

EDEX 401	Introduction to Exceptional Children	4 hours
EDEX 402	Oral Communication Disabilities of Exceptional Children	4 hours
EDEX 403	Mental Retardation	4 hours
EDEX 404	Dimensions of Psycho-educational Appraisal	4 hours
EDEX 431	Teaching Mentally Retarded Students	3 hours
EDEX 432	Curriculum and the EMR Child	3 hours
EDEX 611	Homemaking and Social Learning Skills for the Mentally Retarded	3 hours

NOTE: Because of the extensive nature of a total program meeting requirements in two teaching areas, students usually become associated with the program in their sophomore year or earlier.



DEPARTMENT OF PHYSICAL EDUCATION

Chairman: *J. Powell, CB 343, Phone 275-2595*

Faculty: *Clark, Cleland, Gergley, Higginbotham, Hunter, H. P. Martin, Renner, Rohter*

The Physical Education program offers a comprehensive curriculum designed to certify a student to teach as a physical education specialist in grades K through 12. Areas of study are: (1) Environmental Studies—69 quarter hours; (2) General Professional Preparation—48 quarter hours; (3) Area of Specialization—46 quarter hours; and (4) Electives—17 quarter hours.

Physical Education major students will be required to successfully complete the Required Professional Courses (Phase I, II, III) as outlined on the next page. Physical Education major students in Phase II will be provided a teacher-coaching experience in Teacher Education Centers during two quarters (one quarter on an elementary level, one quarter on a middle school-junior high school level) of their junior year. The courses listed in Phase II—Developmental, will be scheduled concurrently.

In Phase III (senior year), the student is enrolled full time for one quarter as a student teacher in an accredited elementary or secondary school under the direction of a selected supervising teacher.

BACHELOR OF ARTS: PHYSICAL EDUCATION

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)

3. Required Courses

ZOOL 324	Anatomy	5 hours
EDPE 323	Instructional Analysis of Team Sports	2 hours
EDPE 324	Instructional Analysis of Tennis	2 hours
EDPE 325	Instructional Analysis of Aquatics	2 hours
EDPE 326	Instructional Analysis of Gymnastics and Tumbling	2 hours
EDPE 327	Instructional Analysis of Golf	2 hours
EDPE 328	Instructional Analysis of Wrestling	2 hours
or		
EDPE 329	Choreography of Contemporary Dance	2 hours
EDPE 330	Instructional Analysis of Rhythmics	2 hours
EDPE 350	Coaching Theory	3 hours
EDPE 360	School and Community Recreation	3 hours
EDPE 410	Kinesiomechanics	3 hours
EDPE 421	Exercise Physiology—Cardiovascular	4 hours
EDPE 422	Exercise Physiology—Respiratory	4 hours
EDPE 440	Rehabilitation Training Techniques	3 hours
EDPE 450	Organization and Administration of Physical Education	3 hours
Phase I		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
Phase II		
EDEL 318	Teaching Elementary School PE	3 hours
EDPL 320	Elementary School Student Teaching	3 hours
EDTA 305	Evaluation	3 hours
EDTA 306	Learning Theory	3 hours
EDSE 303	School Programs	3 hours
EDSE 380	Physical Education Instructional Analysis	4 hours
EDSE 442	Teaching Reading in the Content Areas	3 hours
EDPL 330	Secondary School Student Teaching	3 hours
Phase III		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 421	Elementary School Student Teaching	9 hours
or		
EDPL 430	Secondary School Student Teaching	9 hours

4. Restricted Electives

None

5. Electives

17 quarter hours may be used as electives or may be utilized to work towards certification in either or both of the related areas of science or health education.

Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Health Education. Health Education certification may be obtained by completing 27 quarter hours of courses which are offered through the College of Education and various other colleges within the University. For further information, see any Physical Education advisor.

DEPARTMENT OF PROFESSIONAL LABORATORY PROGRAM

Chairman: R. Rothberg, CB 323, Phone 275-2401

Faculty: Beadle, Harlacher, Harrow, Hoover, Manning, M. Miller, Sullivan

The nature of the F.T.U. program for students planning a career in teaching is considered innovative and functional because of early and continuous field experience with school children which attempts to blend theoretical consideration with the practical. Cooperative planning and articulation with school personnel in Central Florida provides the most appropriate activities in educational settings.

Practical laboratory experiences in Teacher Education Centers will be scheduled for elementary and kindergarten through twelfth grade certification majors during two quarters of the junior year — Phase II. Majors in Secondary Education will be provided one-half day of practical laboratory experiences in Teacher Education Centers during one quarter of the junior year. Daily participation at a Center is required for approximately one-half day of a school day, with a prescribed sequence of courses scheduled concurrently for the other one-half day. To be admitted to Phase II a student must have an overall 2.0 academic average, have successfully completed Phase I requirements, and must demonstrate competency in written and oral communication skills. Applications for Junior Year Student Teaching must be submitted by the fifth week of the preceding quarter.

In Phase III, Senior Year Student Teaching, the student applies the fundamentals of teaching and academic knowledge attained in Phases I and II. Under the supervision of a selected teacher, the student is primarily responsible for long range planning and instruction. A full quarter is devoted to student teaching. Concurrent enrollment in the seminar, Teaching Strategies, and either EDSE 404 or EDEL 316 is required. To be admitted to Phase III, a student must have satisfied the requirements for Phase I and Phase II; have a 2.2 average in his area of academic specialization; a 2.0 overall average; and be accepted by the office of the Professional Laboratory. An application for Phase III Student Teaching must be submitted no later than October 1 for the Winter Quarter; January 15 for the Spring Quarter; and April 5 for the Fall Quarter.

Other responsibilities of the Professional Laboratory include:

1. coordination of additional field experiences.
2. staff development of supervising teachers and others involved in the pre-service of students.
3. coordination of efforts to provide resource and in-service assistance to the schools of Central Florida.

DEPARTMENT OF SECONDARY EDUCATION

Chairman: *H. Hall, CB 333, Phone 275-2286*

Faculty: *Armstrong, Brunbaugh, Clarke, Fowler, Gurney, Leffler, McGee, E. Miller, Olson, Paugh, Siebert, Ridenour, West*

The program in Secondary Education is for prospective teachers who have an interest in working with adolescent students in a specific academic area at the middle, junior or senior high school levels. Major specializations are available in Biology, Business Education, Chemistry, English, Foreign Language, Mathematics, Physics, Social Studies, and Speech.

Students in Secondary Education have teaching laboratory experience for one quarter in the junior year at selected secondary school Teacher Education Centers. Daily attendance for four one-half-day sessions in the practical setting is used to supplement university

theory classes. A quarter of full-time student teaching is also required at the senior level. Students are encouraged to clear their working and class schedules during field experience quarter to allow them to devote full time to student teaching.

Technical/Vocational Education

The Technical/Vocational Education degree is for individuals in industrial-technical areas or selected health occupations who wish to teach their vocations in secondary or post-secondary schools. To be eligible for the degree, students must have worked full time in the occupation for at least two years and must demonstrate competence in the areas in which they wish to teach.

For the Health Occupations student, a current Florida license may be used to satisfy the teaching specialization of 45 hours. For the 45 quarter hours in the industrial-technical areas, students must demonstrate their knowledge by successfully passing the National Occupations Competency test. There is a \$125 administration fee charged for the test and it is normally administered in the Fall and the Spring Quarters.

BACHELOR OF ARTS: SECONDARY EDUCATION/ BUSINESS EDUCATION/COMPREHENSIVE

Degree Requirements

1. University Graduation Requirements
(See page 46)

2. Environmental Studies Program
(See page 63)

3. Required Courses
Business

ACCY 211, 212	Financial Accounting	6 hours
BADM 371	Legal Environment of Business	3 hours
ECON 202	Principles of Microeconomics	4 hours
ECON 203	Principles of Macroeconomics	4 hours

Business Education

EDBE 101	Introductory Typewriting	3 hours
EDBE 102, 103	Typewriting Production	6 hours
EDBE 201, 202, 203	Principles of Shorthand	9 hours
EDBE 301	Shorthand Dictation	3 hours
EDBE 302	Shorthand Transcription	3 hours
EDBE 305	Office Technology	3 hours
EDBE 406	Office Systems and Procedures	3 hours
EDVE 401	Principles of Vocational Education	4 hours
ENG 301	Professional Report Writing I	3 hours

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 330	Business Instructional Analysis-Typing	4 hours
EDSE 431	Business Instructional Analysis-Shorthand	3 hours
EDSE 432	Business Instructional Analysis-Accounting	3 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours



Phase III		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours
4. Restricted Electives		
EDSE 442	Teaching Reading in the Content Areas	3 hours
5. Electives		
Total Quarter Hours Required		180

BACHELOR OF ARTS: SECONDARY EDUCATION/ BUSINESS EDUCATION/BASIC BUSINESS AND ACCOUNTING

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Basic Business

ACCY 211, 212	Financial Accounting	6 hours
ACCY 315, 316	Intermediate Accounting	10 hours
BADM 371	Legal Environment of Business	3 hours
ECON 202	Principles of Microeconomics	4 hours
ECON 203	Principles of Macroeconomics	4 hours
ECON 411	Comparative Economic Systems	3 hours
ENG 301	Professional Report Writing	3 hours
MGMT 301	Management and Organization Behavior	3 hours
MKTG 301	Marketing	5 hours

Business Education

EDBE 101	Introductory Typewriting	3 hours
EDBE 102, 103	Typewriting Production	6 hours
EDBE 305	Office Technology	3 hours
EDVE 401	Principles of Technical Education	4 hours

Professional Education

Phase I

EDTA 205	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 330	Business Instructional Analysis I	4 hours
EDSE 432	Business Instructional Analysis III	3 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours

Phase III

EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours

4. Restricted Electives

EDSE 442	Teaching Reading in the Content Areas	3 hours
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 5. Electives

		24 hours
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- Total Quarter Hours Required 180

BACHELOR OF ARTS: SECONDARY EDUCATION/ ENGLISH LANGUAGE ARTS

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Composition		
ENG 101	Composition I	4 hours
ENG 103	Exploring Literature Through Writing	3 hours
ENG 208	Principles of Creative Writing	3 hours
ENG 307	Writing Skills	4 hours
EDSE 440	Teaching Language and Composition	3 hours
Literature		
ENG 202	Literary Analysis	3 hours
ENG 211, 212 213, 214	Survey of English Literature	12 hours
ENG 311, 312 313	Survey of American Literature	9 hours
ENG 415	Readings in Shakespeare	3 hours
EDSE 441	Literature for Adolescents	3 hours
History and Development of Language		
ENG 371	Principles of Linguistics	3 hours
ENG 473	Transformational Grammar	3 hours
Reading		
EDSE 442	Teaching Reading in the Content Areas	3 hours
Speech		
SPE 101	Fundamentals of Oral Communication	3 hours
SPE 371	Speech and Human Relations	3 hours
Professional Education		
Phase I		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
Phase II		
EDSE 305	Secondary School Curriculum	3 hours
EDSE 340	English Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours
Phase III		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours
4. Restricted Electives

ENG 300-400	Contemporary Literature	3 hours
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5. Electives

	Total Quarter Hours Required	180
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BACHELOR OF ARTS: SECONDARY EDUCATION/ FOREIGN LANGUAGE

Degree Requirements

1. University Graduation Requirements
(See page 46)

2.	Environmental Studies Program (See page 63)		
3.	Required Courses for French or Spanish Language		
	101, 102, 103	Elementary Language and Civilization	12 hours
	201, 202, 203	Intermediate Language and Civilization	12 hours
	301	Conversation	4 hours
	303	Composition	4 hours
	311, 312, 313	Survey of Literature	12 hours
	401	Phonetics and Dictation	4 hours
	EDSE 320	Language as Human Behavior	3 hours
	Professional Education		
	Phase I		
	EDTA 206	Human Development	3 hours
	EDTA 307	Teaching Analysis	5 hours
	Phase II		
	EDSE 305	Secondary School Curriculum	3 hours
	EDSE 321	Foreign Language Instructional Analysis	4 hours
	EDSE 421	Oral Teaching of Foreign Languages	3 hours
	EDTA 305	Principles of Evaluation	3 hours
	EDTA 306	Variables Affecting School Learning	3 hours
	EDPL 330	Secondary School Student Teaching (A)	3 hours
	Phase III		
	EDSE 404	Instructional Techniques	3 hours
	EDPL 408	Teaching Strategies	3 hours
	EDPL 430	Secondary School Student Teaching (C)	9 hours
4.	Restricted Electives		
	EDSE 442	Teaching Reading in the Content Areas	3 hours
	FRE or SPA 300-400	Electives	16 hours
5.	Electives		
	Total Quarter Hours Required		180

BACHELOR OF ARTS: SECONDARY EDUCATION/MATHEMATICS

Degree Requirements

1.	University Graduation Requirements (See page 46)		
2.	Environmental Studies Program (See page 63)		
3.	Required Courses		
	Mathematics		
	COMP 205	Algorithmic Process	3 hours
	MATH 110, 111	Precalculus Mathematics	8 hours
	MATH 211	Analytic Geometry	3 hours
	MATH 271	Logic and Proof in Mathematics	4 hours
	MATH 315	Introduction to Number Theory	3 hours
	MATH 318, 319	Linear Algebra	8 hours
	MATH 321, 322, 323	Calculus	12 hours
	MATH 351, 451	Foundations of Geometry	7 hours
	STAT 301	Fundamentals of Probability and Statistics	4 hours
	EDSE 453	Mathematics Laboratory Methods	3 hours

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 350	Mathematics Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours

Phase III

EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours

4. Restricted Electives

EDSE 442	Reading in the Content Areas	3 hours
MATH 300-400	Electives	6 hours

5. Electives

20 hours

Total Quarter Hours Required

180



BACHELOR OF ARTS: SECONDARY EDUCATION/ SCIENCE EDUCATION/BIOLOGY

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Biological Sciences

BIOL 110	Basic Biology	5 hours
BIOL 350	Principles of Ecology	4 hours
BIOL 360	Genetics	4 hours
MICR 200	General Microbiology	4 hours
ZOOL 100	General Zoology	4 hours
ZOOL 324	Human Anatomy	5 hours
EDSE 361	Biological Laboratory Teaching	3 hours

Chemistry		
CHEM 111	General Chemistry—Fundamentals	5 hours
CHEM 112	General Chemistry—Organics	3 hours
CHEM 113	General Chemistry—Biochemistry	3 hours
CHEM 115	General Chemistry Laboratory—Organic	1 hour
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
Professional Education		
Phase I		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
Phase II		
EDSE 305	Secondary School Curriculum	3 hours
EDSE 360	Science Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours
Phase III		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours
4. Restricted Electives		
EDSE 442	Teaching Reading in the Content Areas	3 hours
	Biological Science Electives 300-400 level	12 hours
5. Electives		31 hours
Total Quarter Hours Required		180

BACHELOR OF ARTS: SECONDARY EDUCATION/ SCIENCE EDUCATION/CHEMISTRY

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Chemistry		
CHEM 265	Analytical Foundations	2 hours
CHEM 261, 262, 263	Chemistry Fundamentals	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 321, 322, 323	Organic Chemistry	10 hours
CHEM 324	Organic Laboratory Techniques	2 hours
CHEM 351, 352	Analytical Chemistry	6 hours
EDSE 462, 463	Chemistry Laboratory Teaching	4 hours
Mathematics		
MATH 110, 111	Precalculus Mathematics	8 hours
MATH 211	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus	12 hours
Professional Education		
Phase I		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II		
EDSE 305	Secondary School Curriculum	3 hours
EDSE 360	Science Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours
Phase III		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours
4. Restricted Electives		
EDSE 442	Teaching Reading in the Content Areas	3 hours
CHEM 300-400	Electives	12 hours
5. Electives		15 hours
Total Quarter Hours Required		180

BACHELOR OF ARTS: SECONDARY EDUCATION/SCIENCE EDUCATION/PHYSICS

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Physics

PHYS 103	Astronomy	4 hours
PHYS 211, 212, 213	General Physics	12 hours
PHYS 282, 283	Physics Laboratory	2 hours
PHYS 344	Modern Physics for Engineers	3 hours
PHYS 354	Optics and Wave Motion for Engineers	3 hours
PHYS 380	Physics of Scientific Instruments	4 hours
PHYS 382	Intermediate Physics Laboratory	4 hours
EDSE 464, 465	Physics Laboratory Teaching	4 hours

Mathematics

MATH 110, 111	Precalculus Mathematics	8 hours
MATH 211	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus	12 hours

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 360	Science Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours

Phase III

EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours

4. Restricted Electives		
EDSE 442	Teaching Reading in the Content Areas	3 hours
PHYS 300-400	Elective	4 hours
5. Electives		22 hours
	Total Quarter Hours Required	180

BACHELOR OF ARTS: SECONDARY EDUCATION/SOCIAL SCIENCES

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Social Studies

ECON 201	Fundamentals of Economics	3 hours
GEOG 301	Resource Geography	3 hours
HIST 301, 302, 303	Western Culture and Civilization	12 hours
HIST 311, 312, 313	American History	12 hours
PCL 201	American National Government	4 hours
SOC 201	General Sociology	4 hours
EDSE 471	Trends in Secondary School Social Science	3 hours

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 370	Social Science Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours
EDPL 330	Secondary School Student Teaching (A)	3 hours

Phase III

EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours

4. Restricted Electives

EDSE 442	Teaching Reading in the Content Areas	3 hours
GEOG 300-400	Elective	4 hours
Student must have additional credits in history, political science, and sociology with at least 12 credits in one area.		20 hours
 5. Electives
- | | | |
|--|------------------------------|-----|
| | Total Quarter Hours Required | 180 |
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BACHELOR OF ARTS: SECONDARY EDUCATION/SPEECH

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)

3. Required Courses

Speech and Communications

COM 100	Basic Communication	4 hours
COM 301	Communication as a Behavioral Science	4 hours
COM 363	Group Interaction and Decision Making	4 hours
SPE 101	Fundamentals of Oral Communication	3 hours
SPE 261	English Phonetics and American Dialects	5 hours
SPE 360	Argumentation and Debate	4 hours
SPE 361	Persuasion: Motivation	4 hours
SPE 366	Speech Composition	4 hours
SPE 473	Directing Extracurricular Speech Activities	3 hours

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDSE 305	Secondary School Curriculum	3 hours
EDSE 310	Speech Instructional Analysis	4 hours
EDTA 305	Principles of Evaluation	3 hours
EDTA 306	Variables Affecting School Learning	3 hours

Phase III

EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Secondary School Student Teaching (C)	9 hours

4. Restricted Electives

EDSE 442	Reading in the Content Areas	3 hours
COM-SPE	Electives taken from: COM 313, COM 463, SPE 362, SPE 371	12 hours
	Students must have an additional twelve credits in Drama, Journalism or Speech Pathology.	12 hours

5. Electives

	Total Quarter Hours Required	180
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BACHELOR OF ARTS: SECONDARY EDUCATION/TECHNICAL/VOCATIONAL

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

Health Occupations

Students may complete a specialization in a Health Occupations area by meeting the requirements for teacher certification set forth in the Florida Accreditor Code and by submitting evidence of two years work experience at the journeyman, technician, or trained employee level. 45 hours

Industrial-Technical

Students may complete a specialization in a skilled trade area by successfully passing both the **written** and the **performance** portions of the Occupations Competency Test in that area. Two years of work experience is also required

Specific skilled trade tests are available in the following Occupational Industries:

Automotive	Food
Aviation	Graphic Arts
Building	Machine
Drafting	Metal
Electrical	Personal Service
Electronics	Wood

Professional Education

Phase I

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours

Phase II

EDVA 401	Philosophy and Principles of Technical Education	4 hours
EDVE 402	Methods of Teaching Technical/Vocational Subjects	5 hours
EDVE 421	Curriculum Planning for Vocational Education	4 hours
EDVE 422	Evaluation of Occupational Education	4 hours
EDVE 423	Analysis of Learning as Applied to Vocational Education	4 hours

Phase III

EDLS 451	Utilization of Educational Media	4 hours
EDSE 442	Teaching Reading in the Content Areas	3 hours
EDPL 450	Directed Field Experience	12 hours

4. Restricted Electives
None

5. Electives 13 hours
- Total Quarter Hours Required 180

DEPARTMENT OF TEACHING ANALYSIS

Chairman: D. Hernandez, CB 322, Phone 275-2426

Faculty: Barr-Johnson, Bollet, Fagan-Carr, Cornell, Craig, Dziuban, Fennell, Kysilka, Shadgett, Sulloway, Weidenheimer, Al Wood, Lex Wood

Teaching Analysis serves three basic functions with the College of Education. First, it provides courses which meet University and state certification requirements in the Foundations area. Specifically, EDTA 307, Teaching Analysis (5 QH) meets social foundations requirements and EDTA 206, Human Development (3 QH) meets psychological foundations requirements. Successful completion of these courses meets requirements of Phase I, Analysis of Teaching; which is prerequisite for entry into Phase II, Development. Second, Teaching Analysis provides three courses designed to meet Advanced Environmental Studies requirements:

EDTA 480	Overview of Education	3 hours
EDTA 481	Trends and the Future of Education	3 hours
EDLS 380	Library Resources and Materials	3 hours

Third, Teaching Analysis houses two K-12 programs leading to the Bachelor of Arts Degrees in Visual Arts Education and Library/Media Specialist. Certification in Music Education is offered cooperatively with the College of Humanities and Fine Arts. Requirements are listed under the Department of Music.

BACHELOR OF ARTS: K-12/LIBRARY MEDIA SPECIALIST

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses

EDLS 301	Foundations of Librarianship	4 hours
EDLS 321	Organization of a Media Center	4 hours
EDLS 421	Administration of the Library Media Center	4 hours
EDLS 431	Cataloging and Classification	4 hours
EDLS 441	Reference Materials	4 hours
EDLS 451	Utilization of Educational Media	4 hours
EDLS 452	Preparation of Media	4 hours
EDLS 521	Administrative Principles in Media Centers	4 hours
EDLS 531	Nonbook Materials	4 hours
EDLS 532	Acquisition of Library Materials	4 hours
Literature		
EDEL 307	Literature for Children	3 hours
EDSE 441	Adolescent Literature	3 hours
Reading		
EDSE 442	Reading in the Secondary School	4 hours
Professional Preparation (38 hours)		
Phase I—Analysis		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
Phase II—Development		
EDSE 303	School Programs	3 hours
EDTA 305	Evaluation	4 hours
EDTA 306	Learning Theory	3 hours
EDPL 320	Student Teaching	3 hours
EDPL 330	Student Teaching	3 hours
Phase III—Application		
EDSE 404	Instructional Techniques	3 hours
EDPL 408	Teaching Strategies	3 hours
EDPL 430	Student Teaching	9 hours
 4. Restricted Electives
Electives in supportive areas to be selected on advice of Library/Media counselor.
 5. Electives
- | | |
|------------------------------|-----|
| Total Quarter Hours Required | 180 |
|------------------------------|-----|

BACHELOR OF ARTS: K-12/VISUAL ARTS EDUCATION

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses:

Production	
ART 201	Design
	3 hours

ART 202	Design	3 hours
ART 203	Design	3 hours
ART 211	Drawing	3 hours
ART 212/311	Drawing	3 hours
ART 304	Design in Advertising	3 hours
ART 341	Photography	3 hours
ART 351	Painting	3 hours
ART 361	Printmaking	3 hours
ART 381	Ceramics	3 hours
ART 409	Fiber, Fabrics	3 hours
ART 410	Metal, Wood	3 hours
ART 435	Environmental Arts	4 hours
Criticism. Select two (2).		
ART 221	Art History	3 hours
ART 222	Art History	3 hours
ART 223	Art History	3 hours
ART 433	Theory and Criticism	3 hours
Curriculum (18)		
EDVA 431	2-D Instructional Material	5 hours
EDVA 432	3-D Instructional Material	5 hours
EDVA 433	Graphics Instructional Materials	5 hours
EDVA 501	Continuing Art Programs	3 hours
Professional Preparation		
Phase I—Analysis		
EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
EDVA 401	Elementary School Art	3 hours
EDVA 402	Secondary School Art	3 hours
Phase II—Development		
EDPL 320	Student Teaching	3 hours
EDSE 303	School Programs	3 hours
<i>Block B</i>		
EDPL 330	Student Teaching	3 hours
EDTA 305	Evaluation	3 hours
EDTA 306	Learning Theory	3 hours
Phase III—Application		
EDPL 430	Student Teaching	9 hours
EDPL 408	Teaching Strategies	3 hours
EDSE 404	Instructional Techniques	3 hours

4. Restricted Electives

Must be selected with advice of Visual Arts counselor and may vary based on prerequisite deficiencies.

5. Electives

Total Quarter Hours Required

180

COLLEGE OF EDUCATION GRADUATE PROGRAMS

DEGREE: MASTER OF ARTS; MASTER OF EDUCATION

Program Coordinator: *N. McLain*, CB 303, Phone 275-2436

The College of Education offers advanced courses for students who have a baccalaureate degree. The courses may be used to meet certificate requirements, for professional or personal updating, for transfer to other institutions (subject to the acceptance criteria of the other institution), and for meeting the requirements for the Master of Education or Master of Arts.

Certification in the specialties may be pursued independently of a degree program. The degree programs meet the requirements for the Florida Rank II, Post Graduate certificate and are designed to develop a high level of proficiency in educational personnel. The courses are grouped into three categories:

- A. Core—expanding the person's background in research, learning developmental and measurement factors.
- B. Curriculum—improving the person's skill in program planning and instructional techniques.
- C. Subject field content—extending the person's knowledge in his specialization field.

ADMISSION REQUIREMENTS

1. University Admission Requirements
(See pages 46 and 58)
2. College or Program Admission Requirements
For M.Ed., Course work completed for Rank III (Basic bachelor's level)
State of Florida Teaching Certificate.

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: None for M.Ed.; for M.A., contact the program coordinator
2. Core Courses: 12 quarter hours including EDTA 695. Research Methods
3. Restricted Electives: None specified
4. Research Report: Required; 4 hours of credit
5. Examinations: Comprehensive examination required
6. Other Requirements: None specified

Total Quarter Hours Required	45-54 (varies with specialty)
BOR Maximum Hours Allowed	60
(See pages 61-62)	

Areas of Specialization

Administration/Supervision
 Elementary Education
 Elementary Education/Exceptional Child
 Elementary Education/Reading Specialist
 Guidance
 K-12/Library Media Specialist
 K-12/Music Education
 K-12/Physical Education
 K-12/Visual Arts Education
 Secondary Education/Business Education
 Secondary Education/English Language Arts
 Secondary Education/Foreign Languages
 Secondary Education/Mathematics
 Secondary Education/Science
 Secondary Education/Social Sciences
 Secondary Education/Speech

COOPERATIVE DOCTORAL PROGRAM

Florida Atlantic University in Boca Raton, Florida, offers two doctoral programs through the College of Education. One is in administration

and supervision, which is for people who are interested in decision-making positions in school organizations. The second degree, in curriculum and instruction, having an emphasis on a content subject field discipline, is designed primarily for the junior college teacher, although it could be used in other teaching situations. The subject field areas possible in curriculum and instruction are limited to the fields in which a master's degree is already offered at either FTU or FAU.

The College of Education at Florida Technological University is joining FAU in the doctoral program to offer students an opportunity to do at least some of their work in Orlando, rather than having to move or commute to the Boca Raton area for their entire program. The degree, Doctor of Education, will be awarded by Florida Atlantic University.

Contact the College of Education Graduate Program Coordinator for further information.

COLLEGE OF ENGINEERING

UNDERGRADUATE PROGRAMS

ELECTRICAL ENGINEERING

ENGINEERING MATHEMATICS AND COMPUTER
SYSTEMS

ENVIRONMENTAL ENGINEERING

INDUSTRIAL ENGINEERING

MECHANICAL ENGINEERING

ENGINEERING TECHNOLOGY

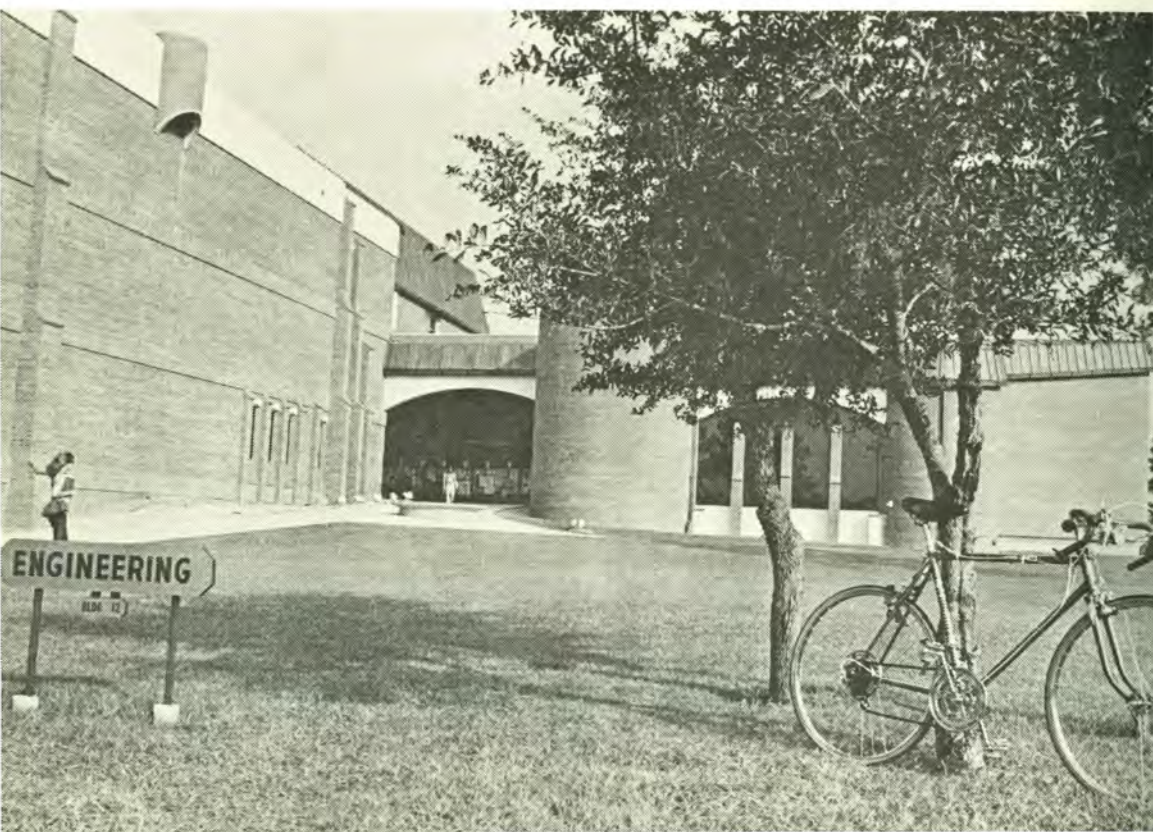
GRADUATE PROGRAMS

ENGINEERING

ENVIRONMENTAL SYSTEMS MANAGEMENT

DOCTORAL PROGRAM (FTU-UF)

ELECTRICAL ENGINEERING



COLLEGE OF ENGINEERING

Dean: *R. Kersten, EN 207, Phone 275-2156*

Assistant Dean: *D. Block, EN 212, Phone 275-2156*

The Engineering curriculum at Florida Technological University is directed toward professional objectives. These objectives are best met by completing the bachelor's degree program followed by additional professional education at the graduate level.

The satisfactory completion of an engineering curriculum of a minimum of 192 quarter hours, including environmental studies courses, an engineering core curriculum, and both required and elective courses of study in a selected area of concentration (option) of the student's choice, leads to the degree of Bachelor of Science in Engineering. Graduates of the College of Engineering may pursue a wide variety of careers in private practice, industry, education, and government. The programs of study offered by the College are designed to assist the student in the attainment of his professional career objectives through sound academic preparation.

Satisfactory completion of an engineering technology curriculum of 192 quarter hours, including environmental studies courses, an engineering technology core curriculum, and required and elective courses in a selected technology module of the student's choice, leads to the degree of Bachelor of Engineering Technology. Technology graduates also may seek a wide variety of careers in private practice, industry, and government. Programs of study are applications oriented and are designed to assist the student in attainment of his career objectives.

Students who wish to be admitted to full freshman standing in engineering studies in the College should present certain secondary school units in addition to the minimum University requirements. A total of $3\frac{1}{2}$ units is required in mathematics, including advanced algebra, geometry, and trigonometry. Calculus is recommended. The laboratory sciences chosen must include at least one unit in physics and one in chemistry. One unit of biology is strongly recommended.

Students who have omissions or deficiencies in subject matter preparation may be required to complete additional university credit course work which may not be applied toward an engineering degree. The most common deficiencies that must be removed before beginning regular engineering course work are algebra, trigonometry, general physics, English and general chemistry.

Subject to the general grade and residence requirements of the University, provisional credit will be granted for transferred course work equivalent to that required in Florida Technological University's engineering program. These provisional credits will become final only after the student has demonstrated his ability to do satisfactory work at the University. Transfer credits in pre-engineering from a junior college will be used to satisfy freshman and sophomore level requirements only. Typically, students who have completed the A.A. degree (or equivalent education) with calculus, chemistry, physics, engineering graphics, and a course in computer science (with FORTRAN) can complete the B.S.E. program in two additional years. The status of a student and the specific credits acceptable toward his degree will be determined by the Dean of the College.

Students who are well prepared usually will be able to complete the program of study leading to the degree of Bachelor of Science in Engineering in four years. In cases of inadequate secondary school preparation or other extenuating circumstances, the undergraduate program may be extended beyond the normal four-year period.

Students who wish to be admitted to the engineering technology program must possess an Associate of Science (or equivalent education) degree in an appropriate engineering technology area. The engineering technology program provides junior and senior year education. Freshman and sophomore year technology education must be taken at a community college or equivalent. Typically students who have completed the A.S. degree in technology should complete the BET program in two additional years. The status of a student and the specific credits acceptable toward his degree will be determined by the Dean of the College. Provisional credits accepted for transferred course work will become final only after a student has demonstrated his ability to do satisfactory work at the University. Students from engineering programs may transfer into the engineering technology program at the junior level.

STUDENT PERFORMANCE

Prior to enrolling in courses at the 300 level, each student must: (1) receive approval from the office of the Dean of Engineering, and (2) secure from his advisor an approved course of study for his remaining work. Generally, students with a 2.0 grade point average (C average), or higher will receive approval.

Counseling is provided in order that the student may be aided in making his choice of major. Required and elective courses for each area are listed later in this Bulletin and changes or substitutions may be made only with the approval of the Dean.

Any student whose written or spoken English in any course is unsatisfactory may be reported by the instructor to the Dean. The Dean may assign supplementary work, including additional course work, consistent with the needs of the student. The granting of a degree may be delayed until the work is satisfactorily completed.

A student enrolled in the College as an undergraduate must fulfill all University degree requirements including the Environmental Studies Program, as well as the specialized curriculum requirements for the particular degree option being pursued. To be certified for graduation, a student must achieve a "C" grade point average (2.0) overall and in the courses in his major (option).

BACHELOR OF SCIENCE IN ENGINEERING DEGREE PROGRAM

Engineering is one of the most important evolutionary forces in civilization today. The professional engineer should assume a leading role not only in the conceptual and planning stages but also in the design, manufacturing, construction, operation, and management phases of various engineering facilities and programs. At the same time, the professional engineer should understand that engineering innovation is a means of solving problems in our society and accept a large measure of social responsibility for significant engineering developments.

The professional engineer is the key individual in a team of technical specialists which includes engineering design specialists, engineering operations and management specialists, and engineering technicians. It is the purpose of Florida Technological University's engineering program to provide the broad university level educational opportunities requisite for preparing qualified individuals to make effective contributions through careers in engineering and applied science in our technologically oriented society.

The principal areas of study in the engineering curriculum are devoted to the basic sciences, mathematics and the fundamentals of engineering problem solving. These courses are not training courses for any of the mechanical or manipulative skills, but rather are planned to provide preparation for development, planning, design, research, graduate work; and with certain electives, for operation, production, testing, maintenance and management. This program prepares the student for professional registration, and for the pursuit of graduate work in engineering. In addition, basic engineering programs are increasingly being considered as appropriate preparation for advanced study in other professional areas, e.g., law, medicine, architecture. For assistance and counsel in planning a program, each student will be assigned an advisor from the instructional staff in his chosen area of interest.

ENGINEERING CORE REQUIREMENTS¹

The engineering core consists of basic engineering sciences subject matter and is common to all options. Because this requirement is a substantial part of the Bachelor's degree program, it gives the student time to become adjusted and to choose a field of specialization for which he is best suited.

COMP 302	Programming and Numerical Methods	3 hours
ENGR 101	Engineering Graphics	3 hours
ENGR 103	Creative Design	4 hours
ENGR 151, 152	Chemical Foundations of Engineering	6 hours
MATH 211	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus (4, 4, 4)	12 hours
ENGR 211	Engineering Concepts	4 hours
ENGR 310	Engineering Analysis — Statics	4 hours
MATH 324	Intermediate Calculus	4 hours
ENGR 311	Engineering Analysis — Dynamics	4 hours
ENGR 312	Mechanics of Materials	5 hours
ENGR 320	Electrical Science	4 hours
ENGR 321	Principles of Electrical Engineering	4 hours
ENGR 322	Electronic Engineering	4 hours
ENGR 323	Electrical Devices and Systems	4 hours
ENGR 331	Thermodynamics	3 hours
ENGR 332	Fluid Mechanics	4 hours
ENGR 341	Engineering Economics Analysis	3 hours
ENGR 342	Systems Analysis	3 hours
ENGR 351	Structure and Properties of Materials	3 hours
ENGR 352	Structure & Properties of Materials II	3 hours
ENGR 361	Engineering and the Environment	3 hours
ENGR 371	Probability and Statistics for Engineers	3 hours
MATH 331	Differential Equations	4 hours
PHYS 344	Modern Physics for Engineers	3 hours
PHYS 354	Optics and Wave Motion for Engineers	3 hours
ENGR 431	Transport Processes	3 hours

ENG 310	Professional Report Writing	3 hours
ENGR 442	Operations Research	3 hours
ENGR 443	Engineering Administration	3 hours
Biological or Earth Science Elective		3 hours

¹Includes scientific requirements and advanced program electives of the Environmental Studies

ACADEMIC OPTIONS

Students in the B.S.E. program must elect an option in one of the departments of the College of Engineering. Each option permits the student to build a professional specialization on the unified engineering core and environmental studies requirements. In the development of this concept, the student is enabled to implement a well-rounded, broad-based approach to engineering problem solutions within the framework of a professional specialization. It is the policy of the College to encourage its graduates to become registered Professional Engineers and to seek the Master of Science in Engineering (M.S.E.) as the appropriate educational preparation for professional practice in engineering. See page 117 for information about the M.S.E. program at FTU.

DEPARTMENT OF CIVIL ENGINEERING AND ENVIRONMENTAL SCIENCES

Chairman: *J. P. Hartman*, EN 410, Phone 275-2841

Faculty: *Baldwin, Block, Carroll, Jenkins, Kersten, McLellon, Wanielista, Yousef, Zulfacar*

The Department of Civil Engineering and Environmental Sciences offers an option in Environmental Engineering. This option is concerned primarily with the interaction of man and his environment, and the planning, design and control of systems for environmental quality management, with emphasis on the water environment.

A program of study is available within this option which enables the student to pursue an integrated series or sequence of courses in the major field which includes not only basic and fundamental courses but specialized courses as well in the fields of environmental engineering, transportation and urban systems engineering, water resources engineering and related courses in structural and geotechnical engineering. These specialized courses reflect the contemporary developments and trends in systems analysis, environmental quality management, man-environment interaction as well as several of the traditional areas of civil engineering.

Environmental engineers are responsible for research, development, planning, design and construction of the structures and processes that form the basis of our modern civilization. The Environmental Engineering option encompasses water and atmospheric resources, waste treatment and pollution control, urban planning and engineering aspects of environmental health and natural resources. The curriculum in Environmental Engineering (leading to a B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

BACHELOR OF SCIENCE IN ENGINEERING: ENVIRONMENTAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Requirements
(See page 63)
3. Engineering Core Requirements
(See page 107)
4. Required Courses

CEES 401	Environmental Engineering—Chemical Foundations I	3 hours
CEES 402	Environmental Engineering—Chemical Foundations II	3 hours
CEES 411	Environmental Engineering—Water Supply	4 hours
CEES 412	Environmental Engineering—Wastewater	4 hours
CEES 414	Sanitary Systems Design	3 hours
5. Restricted Electives
 Technical Electives Courses chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.

17 hours
6. Electives
 None

Total Quarter Hours Required

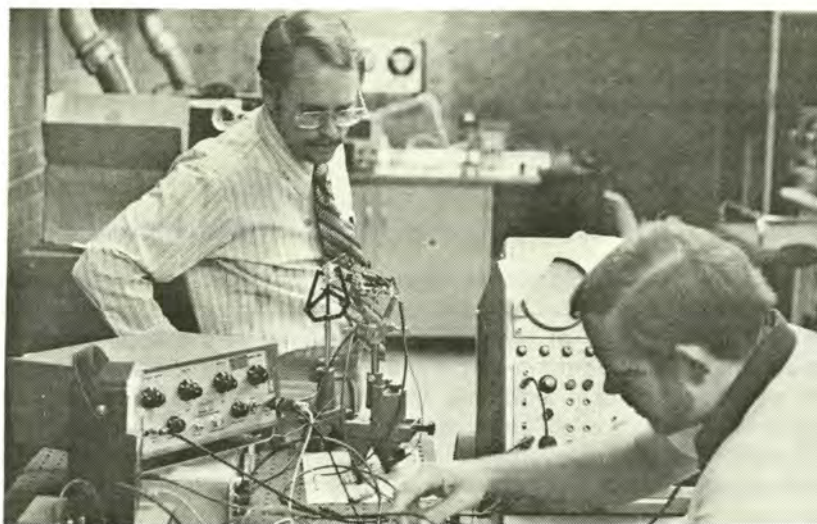
192

DEPARTMENT OF ELECTRICAL ENGINEERING AND COMMUNICATION SCIENCES

Chairman: *B. Mathews, EN 315, Phone 275-2786*

Faculty: *Erickson, Harden, McCarter, Patz, Petrasko, Phillips
Simons, Towle, Walker*

Electrical Engineers are primarily concerned with the development and utilization of devices and systems which are based on electrical phenomena. The range of application includes computer systems, electronics, control systems, electrical power utilization, communication systems, medical instrumentation, etc. The electrical engineer can find professional challenges in virtually every facet of modern technology.



The option in Electrical Engineering is designed to present the basic electrical engineering principles which are common to this broad spectrum of application. In addition, courses are offered which present in-depth studies of specific electrical engineering subdisciplines such as analog and digital computer systems, electrical networks and electronics, electromagnetic fields and microwaves, electromechanics and control, power transmission and utilization, communication and information theory, and solid state systems and devices.

Many modern scientific developments are either essentially electrical in character or depend on electrical equipment and technique. Electrical Engineering graduates will find a broad employment opportunity in the field since it enters into much of industry and service where power is utilized, intelligence transmitted, and control exercised over physical, chemical, or mechanical operations. The curriculum in Electrical Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

BACHELOR OF SCIENCE IN ENGINEERING: ELECTRICAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Engineering Core Requirements
(See page 107)
4. Required Courses

EECS 321	Electrical Networks	4 hours
EECS 322	Electrical Engineering	4 hours
EECS 341	Electromagnetic Fields	4 hours
EECS 411	Logical Component Design	4 hours
ENGR 421	Linear Control Systems	4 hours
5. Restricted Electives
 Technical Elective Courses chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.

14 hours
6. Electives
 None

Total Quarter Hours Required	192
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ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS

Chairman: G. Schrader, EN 412, Phone 275-2236

Faculty: Klee, Lindenberg, Patz, Petrasko, Towle, Wanielista

In contemporary professional engineering practice, and in research and development activities there is an increasing need for engineers with a high degree of training and capability in the application of mathematics and computers to the modeling, simulation and solution of complex technical problems. Many of our modern industries and governmental organizations are involved in the design and analysis of highly complex equipments and systems often requiring rigorous mathematical treatment which can only be carried out effectively through the use of modern, high speed, digital/analog/hybrid com-

puter facilities. The computer has become an indispensable partner to the aerospace systems designer, the microelectronic circuit designer, the environmental systems analyst, the industrial manager, and many other professional engineering oriented activities. Thus, students majoring in Engineering Mathematics and Computer Systems will enjoy a broad spectrum of challenging opportunities.

The option is inter-disciplinary and allows considerable flexibility in tailoring programs to fit individual student interest. The curriculum in Engineering Mathematics and Computer Systems is fully accredited by the Engineers' Council for Professional development.

BACHELOR OF SCIENCE IN ENGINEERING: ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Engineering Core Requirements
(See page 107)
4. Required Courses

EMCS 431	Mini-Computers in Engineering Systems	4 hours
EMCS 432	Real Time Mini-Computer Systems	4 hours
EMCS 472	Engineering Applications of Computer Methods	4 hours
EECS 411	Logical Component Design	4 hours
IEMS 447	Numerical Methods in Systems Analysis	3 hours
5. Restricted Electives
 Technical Elective Courses are chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.

15 hours
6. Electives
 None

Total Quarter Hours Required

192

DEPARTMENT OF INDUSTRIAL ENGINEERING & MANAGEMENT SYSTEMS

Chairman: G. Schrader, EN 412, Phone 275-2236

Faculty: Bauer, Dennis, Doering, Gambrell, Klee, Lin, Lindenberg

The option in Industrial Engineering is concerned principally with the design, improvement, and installation of integrated systems of men, materials, and equipment for operations through the application of the principles of the engineering, mathematical, physical, and behavioral sciences.

The program of study available within this option enables the student to pursue an integrated series or sequence of courses in the major field which includes not only basic and fundamental courses but specialized courses as well, in the areas of management standards development, production and inventory control, project management, work analysis and design, management information systems, computer simulation, operations research, industrial facilities planning and design, and human engineering. These specialized courses, reflect the contemporary developments and trends in each of these areas with emphasis on uses of the digital computer in appropriate courses.

There is a growing tendency on the part of industry, government and institutions to select engineering personnel for managerial positions. Because of this the IEMS courses are oriented to systems management principles and concepts so as to enable the Industrial Engineering graduate to accept and succeed in these opportunities. The curriculum in Industrial Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

BACHELOR OF SCIENCE IN ENGINEERING: INDUSTRIAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Engineering Core Requirements
(See page 107)
4. Required Courses

IEMS 301	Management Standards	4 hours
IEMS 424	Management Control Systems	3 hours
IEMS 461	Human Engineering	3 hours
IEMS 432	System Simulation With Digital Computers	3 hours
IEMS 447	Numerical Methods in Systems Analysis	3 hours
IEMS 434	Industrial Information Systems	3 hours
IEMS 414	Industrial Facilities Planning and Design	4 hours
5. Restricted Electives
 Technical elective courses are to be chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration. 11 hours
6. Electives
None

Total Quarter Hours Required

192

DEPARTMENT OF MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

Chairman: *R. Evans, EN 115, Phone 275-2416*

Faculty: *Beck, Hagedoorn, Nimmo, Nuckolls, Rapson, Smith, Ventre, Wall*

The Department of Mechanical Engineering and Aerospace Sciences is primarily concerned with dynamic physical systems such as transportation, production and energy conversion. Because such systems involve an energy source, the mechanical or aerospace engineer is concerned with the application of the basic laws of the engineering sciences to the conversion, transfer and control of the energy. When dealing with problems of this nature, the engineer must consider the economic constraints and the social implications of the solutions which he proposes.

The Mechanical Engineering option provides the student with the opportunity to pursue his educational objectives within the framework of this broad theme. Primary emphasis is given to the departmental subdisciplines of aerospace sciences, measurements systems engineering, mechanical systems design and control, energy conversion and power systems, thermal sciences and engineering acoustics.

The program is specifically designed to give the student a broad-based undergraduate engineering sciences program in order that he will have sufficient knowledge to converse with specialists in other fields of engineering and to analyze on his own the more basic problems in these fields. By judiciously selecting courses from the departmental subdisciplines, a firm foundation is laid in order that the student will obtain the theoretical tools and the design methodology to pursue successfully a career in the mechanical or aerospace engineering professions. The Curriculum in Mechanical Engineering (leading to the B.S.E. degree) is fully accredited by the Engineers' Council for Professional Development.

BACHELOR OF SCIENCE IN ENGINEERING: MECHANICAL ENGINEERING

Degree Requirements

1. University Graduation Requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Engineering Core Requirements
(See page 107)
4. Required Courses

MEAS 341	Kinematics and Kinetics of Machines	3 hours
MEAS 342	Machine Design and Analysis	4 hours
MEAS 351	Measurement Systems	3 hours
MEAS 423	Vibration Analysis	4 hours
MEAS 482	Heat Transfer	4 hours
5. Restricted Electives
 Technical elective courses are chosen with the approval of the student's faculty advisor and may be made from 300 level courses or above in Engineering, Mathematics, the Sciences, or Business Administration.

16 hours
6. Electives
 None

Total Quarter Hours Required

192

DEPARTMENT OF ENGINEERING TECHNOLOGY

Chairman: *(Acting) H. Griffith, EN 118, Phone 275-2268*

Faculty: *Osborne, Skinner*

The Engineering Technology Degree Program at FTU includes only the upper division (junior and senior years) and is designed primarily for the student that has completed an A.S. degree in Engineering Technology or an equivalent program at a community college. The community college two-year associate of science program is designed to provide the student with the training necessary to become an engineering technician. The upper division Bachelor of Engineering Technology program at Florida Technological University is designed to advance the engineering technician to the engineering technologist level.

The four year engineering technology graduate will provide a vital link in the engineering — fabrication/construction — facility operations chain. He will be practice and applications oriented while at the same time, possessing a broad and comprehensive education in the field. As such he will be key individual in teams of technical

specialists dealing with the environment today. Completion of the required curriculum will prepare qualified individuals to make significant contributions to society and will allow them to progress into responsible technical and management positions.

Principal areas of study in the engineering technology curriculum, building on a sound base attained through the AS degree, will include mathematics and communications. In addition, substantial additional work will be taken in the technical sciences and technical speciality. The courses will include theory and practice along with training. Hence they will provide a sound technical base for subsequent work. For assistance and counsel in planning a program, each student will be assigned an advisor to assist him in selecting the best course sequence to meet his career objectives.

The options (modules) in Engineering Technology are concerned principally with the details of design, maintenance, operation, environmental monitoring and the fabrication/construction functions. The work of the technologist is in direct support of the engineer and the emphasis is on material results and details as constructed, within the broader conceptual and systems processes of the engineer.

Four engineering technology modules (options) are offered as shown. The courses listed in each module are recommended for all students electing to pursue that option. Any deviation from the recommended course in the option must be approved by the Department Chairman and the Dean.

Degree Requirements

1. University graduation requirements

(See page 46)

2. Environmental Studies Program (See page 63)

Basic (54 hours)

Community College (39 hours)¹

FTU (15 hours)

Advanced (15 hours)

¹Includes algebra, trigonometry, basic science, English, speech or report writing, humanities and social sciences. At least one course each in chemistry, physics and computer science should be completed at the Community College. Credit shown is maximum transferable under this program.

3. Required Courses

The program to be taken at the University, assuming good articulation with the Associate of Science program being transferred includes the following: Basic Science, Mathematics and Technical Sciences (included in Technology Core)

Community College (9 hours) FTU (41 hours as shown below)

Technical Specialty and Related Studies

Community College (48 hours) FTU (25 hours as shown below)

MATH 311 Applied Calculus 4 hours

MATH 312 Applied Calculus 4 hours

Chemistry or Physics if not taken at Community College 4 hours

Advanced Program and Technical Electives 9 hours

ENG 310 Professional Report Writing* 3 hours

ENT 303 Problem Analysis 4 hours

ENT 304 Technical Economic Analysis 3 hours

ENT 305 Applied Statics 4 hours

ENT 306 Materials and Processes* 4 hours

ENT 307 Applied Fluid Mechanics 4 hours

ENT 401 Electricity and Electronics* 5 hours

ENT 402	Strength of Materials	4 hours
ENT 403	Applied Thermodynamics	4 hours
ENT	Technology Module (See areas of specialization)	21 hours
ENT 405	Applied Dynamics	4 hours

*Typically taken at Community College

4. Restricted Electives—depends upon Module chosen 6 hours
 5. Electives 6 hours
- Total Quarter Hours Required (Community College 96,
FTU 96) 192

AREAS OF SPECIALIZATION

1. Design Technology Module

The specialization in Design Technology will present the student with the knowledge and skills needed for application to problems concerning specifications, calculations, and procedures involving the design, redesign, testing and operations of mechanical parts, units and assemblies. Typical community college AS Degree programs used for entrance to FTU's Design Technology specialization are Mechanical, Drafting Design, Aerospace and Air Conditioning Technologies.

ENT 341	Contracts and Specifications	3 hours
ENT 342	Electro-Mechanical Design	4 hours
ENT 343	Product Design	4 hours
ENT 441	Structural Design	4 hours
ENT 442	Design Integration	3 hours
ENT 443	Senior Project	3 hours

2. Electronics Technology Module

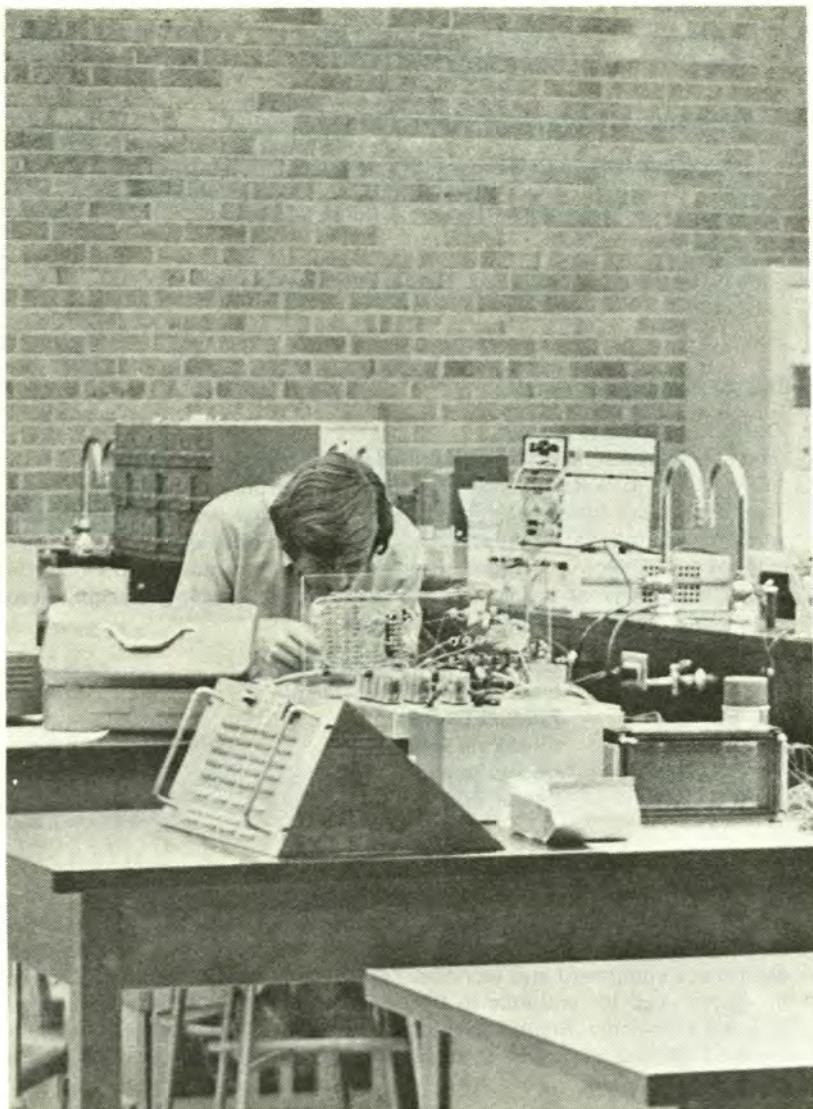
The specialization in Electronics Technology is designed to present the electronics principles beyond the first two years of study that are essential for installation, operation, maintenance and design support or electrical/electronics equipment and facilities. Typical community college AS Degree programs used for entrance to FTU's Electronics Technology specialization are Electronic, Electrical and Instrumentation Technologies. A minimum of 20 quarter hours of basic electronics must be included in the AS Degree program.

ENT 321	Electronics Circuits	5 hours
ENT 322	Digital Circuits	4 hours
ENT 421	Computer Systems	3 hours
ENT 422	Antennas and Propagation	3 hours
ENT 423	Feedback Control	3 hours
ENT 424	Communications Systems	3 hours

3. Environmental Control Technology Module

The specialization in Environmental Control Technology is designed to give the student upper level courses in water, wastewater, air pollution, solid wastes, sampling and analysis, and control processes that are essential for environmental operations control. Typical community college AS Degree programs used for entrance to FTU's Environmental Control Technology specialization are Environmental Control, Civil, and Chemical Technologies.

ENT 331	Hydraulics/Hydrology	3 hours
ENT 332	Water Supply Systems	3 hours
ENT 333	Wastewater Systems	3 hours
ENT 431	Treatment Plant Analysis and Control	3 hours
ENT 432	Environmental Sampling and Analysis	3 hours
ENT 433	Air Pollution Control	3 hours
ENT 434	Solid Wastes Management	3 hours



4. Operations Technology

The module in Operations Technology is designed to present the management operations, supervisory and methods courses that are essential for operations control in the sales, service, manufacturing and construction industries. The curriculum is designed to accept a broad range of AS Degree backgrounds and develop the management and supervisory skills necessary to produce a marketable skill. AS Degree programs with emphasis on Architectural, Building Construction, Aerospace, Automotive Services, Civil, Computer, Fire Control, Drafting and Graphics, Industrial Management or Supervision, Quality Control and Surveying technologies are normally acceptable. Choose a minimum of 21 hours:

ENT 351	Work Analysis	3 hours
ENT 352	Cost Estimating and Analysis	3 hours
ENT 353	Computer Methods in Industry	3 hours
ENT 451	Process Planning and Scheduling	3 hours
ENT 452	Occupational Safety	3 hours
ENT 453	Industrial Quality Control	3 hours
ENT 454	Plant Maintenance Operations	3 hours
ENT 341	Contracts and Specifications	3 hours
ENT 343	Product Design	4 hours
ENT 441	Structural Design	4 hours

COLLEGE OF ENGINEERING GRADUATE PROGRAMS

The College of Engineering offers the Master of Science, the Master of Science in Engineering, the Master of Science in Environmental Systems Management and the Doctor of Philosophy (jointly with the U of F) in Electrical Engineering degrees.

These programs are designed to provide for advanced professional engineering education (MSE) or specialized education in selected areas (MS or MSES). It is the objective of the College of Engineering to produce well-qualified, competent graduates from outstanding accredited programs for the professional practice of engineering and to conduct research and service responsive to the needs of the State of Florida and the Nation.

It has long been recognized that the minimum educational qualification for entry into the engineering profession is the five-year B.S.E./M.S.E. program. This unique "professional school" program is geared to educating practitioners of the profession. The program is clearly in the interests of protecting the health, safety, and general welfare of the public and recognizes the unique statutory (Florida Statutes Chapter 471) and accreditation (Engineer's Council for Professional Development) requirements imposed on those who teach and administer the program.

MASTER OF SCIENCE IN ENGINEERING

Program Coordinator: *D. Block*, EN 212, Phone 275-2156

Advanced professional engineering competencies are achieved through the M.S.E. program. This program is intended for those who have attained an engineering bachelor's degree. Based on the very strong undergraduate, inter-departmental, college-wide engineering core plus option approach, this program leads to the M.S.E. degree, also based on an interdisciplinary approach, but at the department level. Thus the effective and efficient unified core approach is continued through the master's level.

Admission Requirements

1. University Admission Requirements
(See pages 46 and 58)
2. College Admission Requirements
 - a. Applicants for the M.S.E. program must have the B.S.E. or equivalent from an ECPD accredited engineering curriculum in the appropriate discipline area.
 - b. Applicants for the M.S. or M.S.E.S.M. programs must present baccalaureate credentials appropriate to the specialized area of study.

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: Engineering Bachelor's Degree or Equivalent.
2. Core Courses: At least one advanced course in each departmental sub-discipline beyond B.S.E. requirements

19 - 26 hours

3. Restricted Electives: Additional subdiscipline-specialty courses
9 - 15 hours
Additional advanced mathematics, computer systems, natural sciences, engineering sciences, or appropriate supportive areas (beyond B.S.E. core requirements or equivalent) 9 - 15 hours
 4. Thesis or Research Report: Students must be registered in the quarter in which application for graduation is filed 9 or 3 hours
 5. Examinations: Satisfactory completion of a comprehensive examination required.
 6. Other Requirements: None specified.
- | | |
|---|----|
| Total Quarter Hours Required (M.S.E. Program) | 45 |
| BOR Maximum Hours Allowed | 65 |
| (see pages 61-62) | |

MSE AREAS OF SPECIALIZATION

Departmental Specialization Core Course Requirements

Each student will select, with the approval of his graduate committee, departmental core courses as noted below for the professional options. Additional course work may be selected in one of the subdiscipline specialty areas to provide program depth. The student is referred to the course description section of the catalog for further information.

1. ELECTRICAL ENGINEERING OPTION: At least one course from each of five subdiscipline groupings other than the chosen specialization area.

Communications Systems
Systems Control
Digital Systems
Electromagnetic Theory
Electronic Circuits
Hybrid Systems
Optical Communication Systems
Signal and Circuit Theory

2. ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS OPTION: The core requirements for all students will be met by the following courses.

EMCS 572	Engineering Mathematical Analysis	3 hours
EMCS 573	Analytical Methods in Engineering	3 hours
EMCS 574	Analytical Methods in Engineering	3 hours
EECS 613	Computer System Design	3 hours
EECS 621	Digital Computer Systems	3 hours
EMCS 640	Engineering Data Reduction	4 hours
		19 hours

3. ENVIRONMENTAL ENGINEERING OPTION: The student will take the following Environmental Engineering Core and Specialty Courses.

CEES 601	Unit Operations and Processes of Sanitary Engineering I	4 hours
CEES 602	Unit Operations and Processes of Sanitary Engineering II	4 hours
CEES 603	Unit Operations and Processes Laboratory	2 hours
CEES 604	Water and Wastewater Treatment Systems	3 hours
CEES 615	Atmospheric Pollution Control	4 hours
CEES 618	Solid Wastes Management	4 hours
		21 hours

In addition, the student will take at least one course from each of the two following areas:

1. Transportation and Urban Systems Engineering
2. Structures and Geotechnical Engineering

4. **INDUSTRIAL ENGINEERING OPTION:** The core requirements for all students will be met by the following courses.

IEMS 502	Probability for Engineers	3 hours
IEMS 503	Statistics for Engineers	3 hours
IEMS 521	Engineering Reliability & Qual. Assur.	3 hours
IEMS 532	Management Information Systems	4 hours
IEMS 602	Engineering Economic Analysis	3 hours
IEMS 612	System Safety	3 hours
IEMS 624	Operations Research	3 hours
IEMS 629	Production and Inventory Control	4 hours
		26 hours

5. **MECHANICAL ENGINEERING OPTION:** The core requirements for all students will be met by the courses listed.

MEAS 638	Environmental Thermodynamics	3 hours
or		
MEAS 680	Classical Thermodynamics	3 hours
MEAS 642	Principles of Design	3 hours
MEAS 643	Mechanical Design	3 hours
MEAS 653	Experimental Measurements	3 hours
MEAS 674	Mechanics of Viscous Flow	4 hours
or		
MEAS 671	Gas Dynamics	4 hours
MEAS 685	Conduction Heat Transfer	3 hours
or		
MEAS 686	Convection Heat Transfer	4 hours
or		
MEAS 688	Radiation Heat Transfer	3 hours
		19-20 hours

MASTER OF SCIENCE DEGREE

Program Coordinator: *D. Block*, EN 212, Phone 275-2156

This graduate program is designed to provide the competent student in engineering or other selected fields an opportunity to specialize in a particular subject area within engineering. Normally this objective may be attained through the satisfactory completion of graduate-level course work and research endeavor.

Admissions Requirements

1. University Admission Requirements
(See pages 46 and 58)
2. Program Admission Requirements
(See page 117 for College Admission Requirements.)

University Graduate Policies and Procedures

(See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies)

Degree Requirements

1. Prerequisites: Baccalaureate credentials appropriate to the specialized area of study.
2. Core Courses 24-30 hours
3. Restricted Electives: Additional advanced mathematics (beyond MATH 324), computer systems, natural sciences, engineering sciences, or appropriate supportive areas 12 hours
4. Thesis or Research Report: 9 or 3 hours hours

5. Examinations: Satisfactory completion of a comprehensive examination is required.
6. Other Requirements: None specified.

Total Quarter Hours Required (M.S. Program)	45
BOR Maximum Hours Allowed	65
(see pages 61-62)	

MASTER OF SCIENCE IN ENVIRONMENTAL SYSTEMS MANAGEMENT DEGREE

Program Coordinator: *D. Block*, EN 212, Phone 275-2156

The College of Engineering offers graduate work leading to the Master of Science in Environmental Systems Management. The program is designed to provide for advanced professional and specialized education in selected areas of engineering and science related to the management and control of our natural environment.

This program provides for the preparation of engineering specialists for service in environmental related occupations by allowing concentrated study in a limited number of subdisciplines. The program is open to those who have attained the bachelor's degree in engineering or science disciplines closely related to the environmental sciences and environmental or systems engineering.

Admission Requirements

1. University Admission Requirements
(See pages 46 and 58)
2. Program Admission Requirements
(See page 117 for College Administration Requirements)

Degree Requirements

Degree requirements vary depending upon student interests and background. Interested students should consult the chairman of the Civil Engineering and Environmental Sciences Department.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	65
(see pages 61-62)	

DOCTOR OF PHILOSOPHY DEGREE

The College of Engineering is participating in a Cooperative Doctoral program in Electrical Engineering with the University of Florida. Interested students should consult with the chairman of the Electrical Engineering and Communication Sciences Department.

COLLEGE OF HUMANITIES AND FINE ARTS

UNDERGRADUATE PROGRAMS

ART

FILM

ENGLISH

FOREIGN LANGUAGES

FRENCH

GERMAN

ITALIAN

RUSSIAN

SPANISH

HISTORY

HUMANITIES

HUMANITIES AND FINE ARTS

MUSIC

MUSIC EDUCATION

PHILOSOPHY

THEATRE

THEATRE

FILM

GRADUATE PROGRAMS

ENGLISH



COLLEGE OF HUMANITIES AND FINE ARTS

Dean: C. Micarelli, FA 509D, Phone 275-2251

Assistant Dean: H. Smith, FA 509B, Phone 275-2600

The College of Humanities and Fine Arts endeavors to fulfill with the other five colleges of the University the general aims of Florida Technological University. This College has the responsibility of preparing specialists in the principal disciplines of the humanities and the fine arts. The following major study programs are presently offered: art, English, foreign languages (French, Spanish), history, humanities, music, philosophy and theatre. Any one of these majors may be combined with a core of Business Administration courses designed to prepare a student for administrative work within his major. This Humanities and Fine Arts-Administration program is described below. Besides these majors, courses are offered in film, German, Italian, religion and Russian.

The College of Humanities and Fine Arts also offers sound preparation for subsequent study in Law. The quality of undergraduate education for the legal profession, according to the Association of American Law Schools,¹ is grounded in three basic skills and insights: comprehension and expression in words, critical understanding of the human institutions and values with which the law deals, and creative power in thinking.

In defining a proper prelaw curriculum, the Association stresses breadth and flexibility in undergraduate prelaw education, and cites specifically History, Philosophy and English, among others, as valid academic preparation.

The College of Humanities and Fine Arts, in its seven departments, provides programs intended to develop the skills and insights fundamental to the later attainment of legal competence. History, Philosophy, English, and the major in Humanities and Fine Arts seem particularly appropriate programs of study for the student considering law school. (Contact Person: H. Smith, FA 509B, Phone 275-2600)

The College of Humanities and Fine Arts in conjunction with the College of Business Administration offers a program which combines a major in one of the areas in the College of Humanities and Fine Arts with a number of selected courses in the College of Business Administration. This combination of concentrations will prepare the student to assume an administrative position in one of the fields of the Humanities and Fine Arts and will also afford the opportunity of going on for a Master's Degree in Business. The required administration courses are in addition to the requirements for a major in one of the college's departments. (Contact Person: E. Hotaling, FA 140, Phone 275-2867)

A student enrolled in the College of Humanities and Fine Arts must fulfill all of the University requirements and the requirements set by the department of his major.

To be certified for graduation, a student must achieve a "C" (2.0 grade point average) in courses of his major field.

If a student does not demonstrate acceptable skills in written or spoken English, he may be referred by an instructor to the Dean. Additional course work or an individual program of study may be assigned and must be satisfactorily completed before graduation.

In addition to preparing specialists in the various disciplines of the College, the College of Humanities and Fine Arts cooperates with the other five colleges of the University in the Environmental Studies Program in offering electives suitable to all students.

¹Association of American Law Schools and the Law School Admission Council, *Prelaw Handbook: Official Law School Guide, 1973-74*.

DEPARTMENT OF ART

Chairman: S. Lotz, FA 525, Phone 275-2676

Faculty: Chavda, Eyfells, Gaudnek, Ortmyer, Wellman

The curriculum in Art provides thorough grounding in visual expression and an opportunity for specialized professional preparation in art history and in the studio areas of drawing, painting, print-making, photography, graphic design, film, sculpture, and ceramics.

The Department of Art offers programs leading toward both the Bachelor of Arts (B.A.) degree and the Bachelor of Fine Arts (B.F.A.) degree.

The University reserves the right to hold for exhibition purposes work done in classes.

BACHELOR OF ARTS: ART

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses
Varies with Specialization
 4. Restricted Electives
Varies with Specialization
 5. Electives
To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.
- Total Quarter Hours Required: 180

AREAS OF SPECIALIZATION

1. Art History

Required Courses

ART 221, 222, 223	History of Art I, II, III	9 hours
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Restricted Electives

a) Any two:

ART 201, 202, 203	Design Fundamentals I, II, III	
ART 204	Film Design	6 hours

b.) Any one:

ART 231	Visual Arts Overview	4 hours
ART 431	Developing Visual Creativity	4 hours
PHI 341	Aesthetics	4 hours
THA 424	Principles of Motion Picture Art	4 hours

c.) Studio Courses

Any two studio courses	6 hours
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Specialization

300 and 400 level courses in Art History 21 hours

Language and Comprehensive Examination

A satisfactory grade in a comprehensive art history examination and a reading knowledge of one foreign language are required.

Total Quarter Hours in Art courses or approved cognates — 46 hours

2. Art (Studio Areas)

Required Courses

ART 201, 202	Design Fundamentals I, II	6 hours
ART 211, 212	Drawing Fundamentals I, II	6 hours
ART 221, 222, 223	History of Art I, II, III	9 hours

Restricted Electives

a.) Either

ART 203	Design Fundamentals III or	3 hours
ART 204	Film Design	3 hours

b.) Any one:

ART 231	Visual Arts Overview	4 hours
ART 431	Developing Visual Creativity	4 hours
PHI 341	Aesthetics	4 hours
THA 424	Principles of Motion Picture Art	4 hours

c.) Art History

Any 300 and 400 level Art History course	3 hours
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d.) Upper Division Electives in Art

14 hours

Specialization

300 and 400 level courses in one Studio Area
(see Areas of Studio Specialization below) 15 hours

Portfolio Requirement

For the B.A. degree a selective portfolio of work, representing the student's accomplishment in the major Studio Specialization and acceptable to the Studio Faculty, will be submitted during the final Senior quarter.

Total Quarter Hours in Art courses or approved cognates — 60 hours

Areas of Studio Specialization: Ceramics, Drawing, Film, Graphic Design, Painting, Photography, Printmaking, Sculpture

BACHELOR OF FINE ARTS: ART

The B.F.A. degree is recommended for those students who can successfully petition for admission to ART 484 and who intend to pursue work in the Arts at the graduate level.

Degree Requirements

1. University graduation requirements
(See page 46)

2. Environmental Studies Program
(See page 63)

3. Required Courses

ART 221, 222, 223	History of Art I, II, III	9 hours
ART 201 202, 203	Design Fundamentals I, II, III	9 hours
ART 204	Film Design	3 hours

ART 211, 212	Drawing Fundamentals I, II	6 hours
ART 311	Intermediate Drawing	3 hours
ART 484	Senior Studio and Exhibition*	3 hours

4. Restricted Electives

- a.) Art History and Theory
Any 300 and 400 level Art History and Theory courses 14-15 hours
- b.) Any one:

PHI 341	Aesthetics	4 hours
THA 424	Principles of Motion Picture Art	4 hours
- c.) Upper Division Electives in Art 18-19 hours

Specialization

300 and 400 level courses in one Studio Area
(see Areas of Studio Specialization below) 21 hours

5. Electives

To be selected primarily from upper level courses outside the Department, with the approval of student's advisor.

Total Quarter Hours in Art courses or approved cognates — 90 hours
Total Quarter Hours Required — 180 hours

Areas of Studio Specialization Drawing, Graphic Design, Painting, Photography, Sculpture, Drawing and Printmaking combination, and Sculpture and Ceramics combination

*The procedure for admission to ART 484 (Senior Studio and Exhibition) requires a formal application and portfolio submission by the student to the Department Chairman and the Studio Faculty, no earlier than the first quarter of the student's senior year (upon completion of 135 quarter hours). After successfully petitioning for admission to ART 484, the student must complete no less than 45 quarter hours at FTU, of which at least 20 quarter hours must be in Art courses. A grade of C or better in ART 484 is required for graduation.

DEPARTMENT OF ENGLISH

Chairman: R. Grove, FA 432, Phone 275-2212

Faculty: Adicks, Barnes, Browne, Combs (Emeritus), Donnelly, Fetscher, McCown, Omans, Posner, Price, Schiffhorst, Umphrey, Wyatt

The FTU English Department is responsible for the effective teaching of literature in English, including World Literature, as well as expository and creative writing. It serves not only the special needs of those students concentrating in literature or in writing but also the broad needs of the University by offering courses in expository writing and literature to students from other departments.

BACHELOR OF ARTS: ENGLISH

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses
(See Literature Concentration or Writing Concentration below)
4. Restricted Electives
(See Literature Concentration or Writing Concentration below)

5. Electives

To be selected primarily from upper level courses with the approval of the student's advisor.

6. Foreign Language Requirement

Proficiency in one modern foreign language must be shown in **one** of the following ways: passing a proficiency exam; presenting four years of high school credit in one language; completing 24 quarter hours in one language; completing 12 quarter hours in one language (in which case an additional 12 hours of upper-level English courses are required); completing 36 quarter hours in one language (in which case there is a 12 hour reduction in required upper division English electives)

Total Quarter Hours Required

180

AREA OF SPECIALIZATION

1. Literature. The following courses are required for this specialization:

ENG 202	Literary Analysis	3 hours
ENG 211	Survey of English Literature to 1625	3 hours
ENG 212	Survey of English Literature 1626-1798	3 hours
ENG 213	Survey of English Literature 1798-1914	3 hours
ENG 311	Survey of American Literature 1588-1865	3 hours
ENG 312	Survey of American Literature 1865-1914	3 hours
ENG 313	Survey of American Literature Since 1914	3 hours
ENG 314	Survey of British Literature Since 1914	3 hours

Choose two from:

ENG 430	Chaucer	3 hours
ENG 442	Shakespeare's Studies	3 hours
ENG 434	Milton	3 hours

Required:

400 Level Sequence Courses	9 hours
Upper-division electives in English	12 hours

2. Writing. Students desiring to specialize in the area should meet the requirements:

ENG 202	Literary Analysis	3 hours
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Any six of:

ENG 201	Literature of Modern Man	4 hours
ENG 211	Survey of English Literature to 1625	3 hours
ENG 212	Survey of English Literature 1626-1798	3 hours
ENG 213	Survey of English Literature 1798-1914	3 hours
ENG 311	Survey of American Literature 1588-1865	3 hours
ENG 312	Survey of American Literature 1865-1914	3 hours
ENG 313	Survey of American Literature Since 1914	3 hours
ENG 314	Survey of British Literature Since 1914	3 hours
ENG 321	Exploring Poetry	3 hours

Any two of the linguistics courses:

ENG 371	Principles of Linguistics	3 hours
ENG 471	Modern English Grammar	3 hours
ENG 572	History of the English Language	4 hours
ENG 473	Transformational Grammar	3 hours
ENG 483	Black English	3 hours

Must include:	Upper-division Literature	3-4 hours
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Any four of:

ENG 208	Principles of Creative Writing	3 hours
ENG 209	Introduction to Verse Writing	3 hours
ENG 210	Introduction to Fiction Writing	3 hours
ENG 302	Creative Writing Workshop I	3 hours
ENG 303	Creative Writing Workshop II	3 hours
ENG 304	Creative Writing Workshop III	3 hours

ENG 305	Structure of Verse	3 hours
ENG 306	Writing for Children	3 hours
ENG 307	Writing Skills	4 hours
ENG 308	Magazine Writing I	4 hours
ENG 309	Magazine Writing II	4 hours
Any three of:		
ENG 400	Writing About Literature	3 hours
ENG 401	Writing Practicum I	3 hours
ENG 402	Writing Practicum II	3 hours
ENG 403	Writing Practicum III	3 hours
ENG 494	Independent Study	3 hours

DEPARTMENT OF FOREIGN LANGUAGES

Chairman: *A. Cervone*, FA 436, Phone 275-2641

Faculty: *DiPierro, Micarelli, Payas, Taylor*

Language studies in the College of Humanities and Fine Arts provide instruction in French, German, Italian, Russian and Spanish, with majors in French and Spanish. These programs are designed to meet the needs of students who desire competency in a language and expanded understanding of a foreign culture and literature. Students enrolled in 100, 200 and certain 300 level courses are required to attend the language laboratory for at least one hour a week.

A student wishing to major in a foreign language must meet all the requirements for graduation as set forth by the University, the College of Humanities and Fine Arts, and by the Department of Foreign Languages. The foreign language major must complete 44 quarter hours in the chosen language beyond the 100 and 200 level. Among these 44 quarter hours the student must take courses numbered 301, 303, 311, 312 and 313. (Course letter prefix is determined by the language.)

For a major in two foreign languages, a student must take the courses numbered 301, 303, 311, 312, 313, in both languages plus an additional 18 credits in his first language and an additional 9 credits in his second language.

Normal placement is as follows: Four years of one high school language would place the student in the first quarter of the third year; three years, in the second quarter of the second year; two years in the first quarter of the second year; one year, in the second quarter of the first year.

If a student feels that his high school preparation was inadequate, he may be allowed to drop back one quarter with the permission of a member of the Foreign Language Department. If a student has studied a language in high school for two years or less, five or more years prior to the time of enrollment in a language course, he may be allowed to disregard his high school language training and begin anew.

A native speaker must substitute a literature course for the conversation course (301). Moreover, in cases where the native speaker has received advanced education abroad, he will not be permitted to take the advanced composition course (303) for the fulfillment of his major requirements but must substitute another literature course chosen with his advisor.

BACHELOR OF ARTS: FRENCH OR SPANISH

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses for French or Spanish Major

101	Elementary Language & Civilization	4 hours
102	Elementary Language & Civilization	4 hours
103	Elementary Language & Civilization	4 hours
201	Intermediate Language & Civilization	4 hours
202	Intermediate Language & Civilization	4 hours
203	Intermediate Language & Civilization	4 hours
301	Conversation	4 hours
303	Composition	4 hours
311	Survey of Literature I	4 hours
312	Survey of Literature II	4 hours
313	Survey of Literature III	4 hours
 4. Restricted Electives
 5. Electives
- Total Quarter Hours Required 180

BACHELOR OF ARTS: FOREIGN LANGUAGES (COMBINED)

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses for Combined Major in Foreign Languages

301	Conversation	4 hours
303	Composition	4 hours
311	Survey of Literature I	4 hours
312	Survey of Literature II	4 hours
312	Survey of Literature III	4 hours
 4. Restricted Electives
18 credits in first language
9 credits in second language
 5. Electives
- Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Russian Area Studies. Florida Technological University offers an academic program in Russian Area Studies. Five departments in the University have cooperated to provide this unique study program so that the student may more fully enjoy the varied offerings of the University. Upon successful completion of courses, the student will receive a certificate of participation.

DEPARTMENT OF HISTORY

Chairman: J. Shofner, Bldg. FA 551-B, Phone 275-2224

Faculty: Crepeau, Evans, Fetscher, Greene, Greenhaw, Kallina, Pauley, Wehr

in history courses. At least eight quarter hours must be selected from each of three different geographical areas, such as: the United States, Europe, Asia, or Latin America.

History majors are encouraged but not required to develop a proficiency in a foreign language.

BACHELOR OF ARTS: HISTORY

Degree Requirements

1. University Graduation Requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses
None
 4. Restricted Electives
None
 5. Electives
To be selected with approval of the student's advisor.
- Total Quarter Hours Required 180

AREA OF SPECIALIZATION

1. Russian Area Studies. The history department participates in the Russian Area program. For information consult with Professor Evans.

DEPARTMENT OF HUMANITIES, PHILOSOPHY AND RELIGION

Chairman: *R. Flick, FA 415, Phone 275-2273*

Faculty: *Jones, Kassim, Levensohn, Riley, Riser*

The Department offers:

1. An interdepartmental humanities major, with three choices of concentration.
2. A philosophy major, with an optional specialization in religion.
3. Interdisciplinary courses in humanities for non-majors as well as majors, in which representative monuments in the arts, literature and philosophy are studied to reveal a unified picture of culture.
4. A variety of courses in philosophy and religion for non-majors, such as logic, ethics, aesthetics, existentialism, and comparative religions. Most courses, indeed, have no prerequisites and are open to all.
5. Innovative courses (sometimes as special topics) that relate to questions of value in contemporary civilization.

The humanities major, as well as the philosophy major, provides a rich background in the liberal arts. Both are well suited for those students who see the college experience as a means toward fulfillment and preparation for living, and not merely as preparation for earning a living. Yet a liberal education, as provided by these majors, is still considered excellent preparation, by many employers, for careers in personnel management, communications, planning, administration, labor relations, public relations, writing, editing, politics, and



civil service. A major in philosophy, emphasizing logic and ethics, is also excellent background for a career in law.

Both majors may also lead to careers in teaching. One who completes the humanities major and the necessary education courses may be certified to teach humanities in high school. With the addition of a Master's Degree he may qualify to teach in one of the many community colleges. Since philosophy is taught primarily in college, the student who plans to teach it will need to obtain an advanced degree. He will therefore be well advised to include at least a year of foreign language in his program. The humanities major requires a year of foreign language.

The hours required for majors in humanities and philosophy are sufficiently limited to allow the student to obtain a second major in most cases. This may be a wise way of using electives to increase one's options for employment.

BACHELOR OF ARTS: HUMANITIES

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses (all concentrations)

HUM 401	The Ideal of Nature in the Arts	4 hours
HUM 402	The Classical Ideal in the Arts	4 hours
HUM 403	The Spiritual Ideal in the Arts	4 hours
4. Restricted Electives (Choose **one** of the three specializations)

SPECIALIZATION IN IDEAS

- a. Two courses in literature:
ENG 317, 318, 211-213, 311-313, 415 or FL 323, 324 6-8 hours
- b. Two courses in European history:
HIST 301, 302, 305, 306, 307, or HUM/HIST 351, 352 8 hours
- c. Two courses in history of philosophy: PHI 301, 302, 303 8 hours
- d. One course in religion: REL 300, 401 4 hours
- e. Any course in literature, history, philosophy or religion 3-4 hours
- f. One course in art history or appreciation:
ART 221-223, 421, 433 3-4 hours
- g. One course in music appreciation: MUS 312, 320 3-4 hours
- h. One course in theatre history: THA 210, 310, 331-333 3-4 hours

SPECIALIZATION IN THE ARTS

- | | |
|--|---------|
| a. One course in world literature: ENG 317, 318 or FL 323, 324 | 4 hours |
| b. One course in European history: (See choices above) | 4 hours |
| c. One course in history of philosophy: PHI 301, 302, 303 | 4 hours |
| d. One course in religion: REL 300, 401 | 4 hours |
| e. Two courses in art: ART 201-204, 211, 221-223 | 6 hours |
| f. Two courses in creative writing: ENG 302-304 | 6 hours |
| g. Courses in music: MUS 104-108, 305, 312, 320 | 6 hours |
| h. Two courses in theatre: THA 180, 210, 310, 331-333 | 6 hours |

SPECIALIZATION IN WORLD CULTURES

- | | |
|--|-----------|
| a. Two courses in world or European literature:
ENG 317, 318 or FRE 311-313 or SPA 311-313, 316-318 | 8 hours |
| b. Two courses in Russian or Far Eastern history:
HIST 435, 439, 470-472 | 8 hours |
| c. Two courses in non-Western religion: REL 315, 317, 318, 319 | 8 hours |
| d. One course in philosophy: PHI 301, 405 | 4 hours |
| e. Two courses in non-Western art: ART 321, 322, 425 | 6 hours |
| f. One course in music appreciation: MUS 312, 320 | 3-4 hours |
| g. One course in drama development: THA 341-343 | 4 hours |
5. Electives
May be used to obtain a second major, to complete requirements for teacher certification in Humanities in the College of Education, or to strengthen the major with cognate courses.
Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

The humanities major has three areas of emphasis, as indicated above, and the choice of "restricted electives" is determined by the concentration. The Concentration in Ideas is weighted in favor of Western literature, history, philosophy and religion, with lighter emphasis on the Arts. The Concentration in the Arts reverses this emphasis. The Specialization in World Cultures allows the grouping of courses in non-Western Culture, but without ignoring basic aspects of Western Humanities.

BACHELOR OF ARTS: PHILOSOPHY

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

PHI 221	Introduction to Philosophy	4 hours
PHI 301	Ancient Philosophy	4 hours
PHI 312	Existentialism	4 hours
PHI 314	Problems in Contemporary Philosophy	4 hours
PHI 331	Ethics	4 hours
PHI 494	Independent Study	4 hours
4. Restricted Electives

a. A course in critical thinking or formal logic: PHI 105 or 205	4 hours
b. A course in modern philosophy: PHI 302 or 303	4 hours
c. Four elective courses in philosophy or religion	16 hours
5. Electives
To be selected with the approval of the student's advisor. May be used to obtain a major.

Total Quarter Hours Required 180

AREA OF SPECIALIZATION: RELIGION

Students may meet requirements for the Bachelor of Arts in Philosophy by completing the following alternate required courses and restricted electives.

1. Required Courses

PHI 105	Critical Thinking	4 hours
PHI 221	Introduction to Philosophy	4 hours
PHI 301	Ancient Philosophy	4 hours
PHI 331	Ethics	4 hours
PHI 405	Philosophy of Religion	4 hours
REL 401	Comparative Religion	4 hours

2. Restricted Electives

a. Any four:		16 hours
REL 300	The Hebrew and Christian Heritage	
REL 315	Religions of China and Japan	
REL 317	Hinduism	
REL 318	Islam	
REL 319	Ancient Near Eastern Religions	
b. Any two:		8 hours
REL 321	Religion in America	
REL 441	Modern Theology	
REL 471	Mythology	
REL 473	The Religious Quest	
REL 477	Mysticism	

DEPARTMENT OF MUSIC

Chairman: G. Wolf, FA 105A, Phone 275-2867

Faculty: Brodie, Eubank, Hotelling, Palmer, Stenberg, Szabo, Whisler, Wood, Wrancher

Part-time Faculty: Boyd, Butsch, Eshenaur, Hasse, Kupfer, Marks, Micarelli

The degree of Bachelor of Arts with a major in music or music education is designed for the study of music in a liberal arts curriculum. To insure synthesis of the many musical elements into a comprehensive whole, the student is assigned to progressively organized sequences in MUSICIANSHIP and PRINCIPAL PERFORMANCE. The student's initial placement in these fundamental courses is made by the music faculty following a musicianship test and performance audition to be scheduled by the student before his first registration. Subsequent progress is determined by achievement tests and performance juries administered at specific points in his musical development. In general, the student's rate of progress in these basic sequences depends upon his own initiative.

The MUSICIANSHIP courses are designed to enhance the student's writing, analysis, and performance skills. This integrated systematic study of music aids in the development of the student's skills in sight singing, score reading, conducting, aural analysis, visual analysis, part writing, counterpoint, instrumentation, and composition. Emphasis is placed on writing and performance of music. The Musicianship courses meet six hours weekly.

The PERFORMANCE courses include experience in solo and ensemble (major performing organization and chamber music ensembles). Faculty approved junior and senior recitals are included in the requirements for these courses.

The PIANO PROFICIENCY EXAMINATION must be completed satisfactorily before the student can be admitted to MUS 404 in his major

performing medium. Enrollment in MUSIC FORUM is required each quarter for the students enrolled in PRINCIPAL PERFORMANCE.

K-12 Certification

Students who wish to be certified to teach in elementary and secondary schools should consider a major in Music Education. Courses leading to teacher certification are offered cooperatively with the College of Education. Those students who satisfactorily complete the Music Education program will be eligible for a Florida Rank III Teacher's Certificate. The certificate is valid for five years and is renewable. The Music Education graduate receives reciprocal certification in a number of states which have agreements with Florida.

BACHELOR OF ARTS: MUSIC

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

AREA OF SPECIALIZATION: MUSIC

MUS 100*	Music Forum	0 hour
MUS 201- 202-203	Musicianship	12 hours
MUS 204**	Principal Performance I	12 hours
MUS 301- 302-303	Musicianship	12 hours
MUS 304**	Principal Performance II	12 hours
MUS 401- 402-403	Musicianship	12 hours
MUS 404 **	Principal Performance III	12 hours
MUS 474	Directed Experience	12 hours
MUS 484 **	Principal Performance IV	12 hours

4. Restricted Electives
To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.

5. Electives

Total Quarter Hours Required 180

Special Non-course Requirements

1. Piano Proficiency Requirement (before admission to MUS 404).
2. Vocal Sight-reading proficiency (before end of junior year).
3. Faculty-approved public recital, 30-minute length (during junior year).
4. Faculty-approved public recital, 45-minute length (during senior year).

* Required during each quarter the student is registered for Principal Performance.

** Including a Major Performing Organization and a Chamber Music Ensemble.

BACHELOR OF ARTS: MUSIC EDUCATION

Degree Requirements

1. University graduation requirements
(See page 46)

2. Environmental Studies Program
(See page 63)
3. Required Courses

AREA OF SPECIALIZATION: MUSIC EDUCATION

MUS 100*	Music Forum	0 hours
MUS 104	Secondary Performance	9 hours
MUS 201- 202-203	Musicianship	12 hours
MUS 204**	Principal Performance I	12 hours
MUS 301- 302-303	Musicianship	12 hours
MUS 304**	Principal Performance II	12 hours
MUS 401-402	Musicianship	8 hours
MUS 403	Musicianship	(4) hours***
MUS 404**	Principal Performance III	12 hours
MUS 484**	Principal Performance IV	(4) hours***

Professional Education Preparation

EDTA 206	Human Development	3 hours
EDTA 307	Teaching Analysis	5 hours
EDSE 303	School Programs	3 hours
EDTA 306	Learning Theory	3 hours
EDPL 330	Student Teaching	3 hours
EDPL 430	Student Teaching	9 hours
EDPL 408	Teaching Strategies	3 hours
EDSE 404	Instructional Techniques	3 hours
EDSE 442	Reading in Content Areas	3 hours

Music Education Preparation

EDME 401	Elementary School Music	2 hours
EDME 402	Secondary School Music	2 hours
EDME 403	Instrumental Music	2 hours
or		
EDME 404	Vocal Music	2 hours

4. Electives
To be selected primarily from upper level courses outside the Department, with the approval of the student's advisor.
Total Quarter Hours Required 180

Special Non-course Requirements

Same as for Music Specialization except that only a 30-minute Senior Recital is required.

*Required during each quarter the student is registered for Principal Performance.

**Including a Major Performing Organization and a Chamber Music Ensemble.

***Credits in parentheses are recommended but not required.

DEPARTMENT OF THEATRE

Chairman: (Acting) H. Smith, FA 509B, Phone 275-2600

Faculty: Mays, Smith

The department of Theatre offers the student an opportunity to concentrate in the area of theatre either as a preparation for graduate or professional study or as a course of study in the liberal arts.

The major in Theatre consists of four programs of study, one of which will be pursued by the student upon consultation with his advisor and after the basic program has been completed.



BACHELOR OF ARTS: THEATRE

Degree Requirements

1. University graduation requirements

(See page 46)

2. Environmental Studies Program

(See page 63)

3. Required Courses

THA 180	Study of Theatre and Drama	3 hours
THA 210	Cinema Survey	4 hours
THA 290	Theatre Practicum	3, 3 hours

Program "A" Theatre History and Criticism

THA 310	History of the Motion Picture	4 hours
THA 331, 332,333	History of Theatre	9 hours
THA 341, 342, 343	Development of Drama	12 hours
THA 421	Dramatic Theory	3 hours
THA 423	Contemporary Theatre/Drama	3 hours
THA 425	Dramatic Criticism	3 hours
THA 441	Modern Currents in the Theatre	4 hours
THA 486, 487	American Drama	8 hours

Program "B" Technical Theatre and Design

THA 240	Technical Theatre Production	4 hours
THA 241	Stage Carpentry	4 hours
THA 242	Stage Properties	4 hours
THA 350	Costumes: History and Theory	4 hours
THA 351	Costume Design and Make up	4 hours
THA 381	Scene Design	4 hours
THA 382	Stage Lighting	4 hours
THA 390	Theatre Practicum II	4 hours
THA 441	Modern Currents in the Theatre	4 hours
THA 491	Special Topics	4 hours

Program "C" Acting and Directing

THA 240	Technical Theatre Production	4 hours
THA 242	Stage Properties	4 hours
THA 280	Acting	4 hours
THA 310	History of the Motion Picture	4 hours
THA 350	Costumes: History and Theory	4 hours
THA 351	Costume Design and Make up	4 hours
THA 375	Modern Stage Movement	4 hours
THA 380	Directing I	3 hours
THA 381	Scene Design I	4 hours
THA 422	High School Play Directing	3 hours
THA 488	Creative Dramatics/Children's Theatre	3 hours
THA 489	Performance Styles	4 hours

Program "D" Film

THA 180	Study of Theatre and Drama	3 hours
THA 210	Cinema Survey	4 hours
THA 290	Theatre Practicum	3, 3 hours
THA 310	History of Motion Picture	4 hours
THA 424	Principles of Motion Picture Art	4 hours
THA 380, 480 or	Directing I, II	6 hours
THA 381, 382	Scene Design, Stage Lighting	8 hours
ART 341	Photography	3 hours
COM 100	Basic Communication	3 hours
RTV 345	Film for TV	4 hours

4. Restricted Electives

None

5. Electives

Total Quarter Hours Required

180

COLLEGE OF HUMANITIES AND FINE ARTS

GRADUATE PROGRAMS

MASTER OF ARTS: ENGLISH

Program Coordinator: *R. Adicks*, FA 426, Phone 275-2212

The curriculum for the Master of Arts in English, which is ordinarily not a thesis degree, consists of courses and seminars in British, American, and world literature; linguistics; and the teaching of literature and composition. The Master of Arts program provides advanced study for persons holding a bachelor's degree in English or its equivalent. It also enables teachers holding a Rank III Florida certificate to acquire a Rank II certificate while enhancing their teaching ability and developing the knowledge and skills necessary for teaching English in college.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements:
 - a. An undergraduate major in English, or its equivalent, with an average of B in all English courses. (Applicants without a major in English may remove any deficiencies without graduate credit.)
 - b. Approval by the Graduate Committee of the Department of English.
 - c. Three reference reports.

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: ENG 501 (Linguistics) or equivalent.
2. Core Courses: These courses are required:
ENG 610 (Literary Genres), ENG 620 (World Literature), ENG 630 (Movements in Literature), ENG 640 (Problems of Linguistics), ENG 650 (Major Author), ENG 660 (Media and Popular Literature).
3. Restricted Electives: None
4. Thesis: Not ordinarily required.
5. Examinations: A comprehensive examination is required.
6. Other Requirements: Demonstration of a reading knowledge of a foreign language is required.

Total Quarter Hours	45
BOR maximum hours allowed	58
(see pages 61-62)	

COLLEGE OF NATURAL SCIENCES

UNDERGRADUATE PROGRAMS

BIOLOGICAL SCIENCE

**BIOLOGY
BOTANY
FRESH WATER ECOLOGY
MICROBIOLOGY
ZOOLOGY**

CHEMISTRY

COMPUTER SCIENCE

FORENSIC SCIENCE

MATHEMATICS

MEDICAL RECORD ADMINISTRATION

MEDICAL TECHNOLOGY

PHYSICS

PREPROFESSIONAL

**PREDENTAL
PREMEDICAL
PRENURSING
PREOPTOMETRY
PREPHARMACY
PREVETERINARY**

RADIOLOGIC TECHNOLOGY

RESPIRATORY THERAPY

STATISTICS

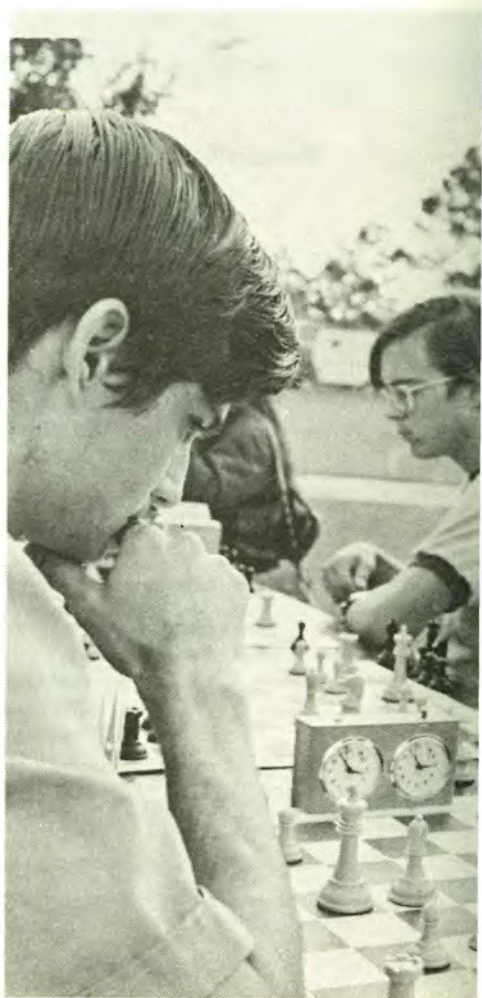
GRADUATE PROGRAMS

BIOLOGICAL SCIENCE

COMPUTER SCIENCE

INDUSTRIAL CHEMISTRY

MATHEMATICAL SCIENCE



COLLEGE OF NATURAL SCIENCES

Dean: *B. Ostle, AD 217, Phone 275-2691*

Assistant Dean: *R. Laird, Ad 215, Phone 275-2691*

It is the purpose of the College of Natural Sciences to assist all students to develop their individual capabilities to the fullest. To this end, the College will provide a broad liberal education through the Environmental Studies Program as well as concentrated study in specialized fields.

Specific objectives of the College of Natural Sciences are:

- A. To see that the student obtains an education which will develop in him a sense of personal and social responsibility; aid him in developing those qualities of mind and character necessary to intellectual advancement and to productive membership in society; arouse his intellectual interests; increase his appreciation of the sciences; bring about a progressive strengthening and refining of the powers of reasoning and judgment; and stimulate him to continue to seek knowledge throughout his adult life.
- B. To provide the student, through its programs of concentrated study, with the opportunity to achieve competence in a scientific or technical profession of his choosing.

In order to achieve the above objectives, the College of Natural Sciences will:

- A. Participate in the Environmental Studies Program to provide all students in the University with the opportunity to obtain some fundamental understanding in the sciences so that they may deal with the complexities of modern life;
- B. Provide undergraduate and graduate instruction in the various subject matter fields which constitute the biological, mathematical, physical and health related sciences;
- C. Encourage and support research in all subject matter fields which are included in the College of Natural Sciences; and
- D. Provide training in preparation for later admission to a professional school of dentistry, medicine, nursing, optometry, pharmacy, or veterinary medicine.

MAJOR STUDY PROGRAMS AND GENERAL REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

In addition to meeting all University requirements, each degree program in the College of Natural Sciences must contain:

- 1. ENG 310, Professional Report Writing II, and
- 2. courses which will introduce the student to the three major scientific disciplines within the College; i.e., physical sciences, biological and health sciences, and mathematical and computer sciences.



To satisfy the latter requirement, each student must take six courses distributed among the two scientific disciplines outside that of his major with a minimum of two courses in either discipline. (Notes: (1) Each department has identified a group of approved courses from which its majors may select in order to satisfy this College requirement. These courses will be of sufficient academic rigor to acquaint the student with both the philosophy and methodology of professionals within their disciplines. (2) With proper justification a student may be permitted to utilize courses offered outside the College of Natural Sciences to satisfy this distribution requirement by obtaining the prior approval of the Dean. Such requests must carry departmental approval before submission to the College of Natural Sciences Academic Standards Committee which will then forward them, with its recommendation, to the Dean.)

All degree programs must be approved by the major department and by the Dean of the College of Natural Sciences.

At the present time, undergraduate degree programs are available in the following areas: Biological Science (with options in Biology, Botany, Fresh Water Ecology, Microbiology and Zoology), Chemistry, Computer Science, Forensic Science, Mathematics, Medical Record Administration, Medical Technology, Physics, Radiologic Technology, Respiratory Therapy and Statistics.

Preprofessional programs are also available to prepare students for further study in schools of dentistry, medicine, veterinary medicine, and other areas. These programs are administered directly through the Dean's office by a preprofessional coordinator with the help of a committee appointed by the Dean.

Preprofessional preparation is also available to students in other health related areas such as nursing, occupational therapy, physical therapy, etc. However, the requirements of professional schools offering degrees and/or clinical training in any of these fields, although similar, vary significantly. Students desiring to take preprofessional work in any of these areas should consult with the Chairman of the Department of Allied Health Sciences prior to beginning their programs.

GRADUATE PROGRAMS

Graduate programs leading to a Master of Science degree are available in Biological Science, Computer Science, Industrial Chemistry, and Mathematical Science.

PROGRAM PLANNING

Although suggested curricula are available in most areas, each student will plan his program in consultation with a faculty advisor appointed by the chairman of the major department or by the Dean of the College of Natural Sciences.

DEPARTMENT OF ALLIED HEALTH SCIENCES

Chairman: J. Bergner, BL 306, Phone: 275-2741

Faculty: Butler, Johns, Laird, Lawson, Lytle, Rogers, Tucker

Courtesy Appointments: Bradford, Calabrese, Capraun, Carleton, Carr, Condrón, David, Getting, Gilbert, Gregg, Hall, Heinsohn, Hill, Hinkle, Holcomb, Hollon, Hughes, Jackson, Judy, Kerman, Kernodle, Lee, Lipsit, Luce, Maurer, Murray, Neill, Partain, Reyes, Rogers, E. Smith, Snyder, Stoner, Symonds, Van Hook, Walsh, Wardell, Willard, Worrell

The Department of Allied Health Sciences offers the Bachelor of Science degree in four fields: Medical Record Administration, Medical Technology, Radiologic Technology, and Respiratory Therapy. In addition, a series of courses is offered under the AHS designation.

Today's health care industry can best be described as dynamic, both from efforts within itself to seek new and improved health care delivery systems and from developments without, as seen in the rapid expansion of scientific knowledge and continuing medical advances. This has led to an increasingly critical need for highly trained personnel in an ever-widening variety of professional health fields. The present potential for programs of care, treatment and prevention of diseases and disability is on a scale and of a quality never before envisioned. However, this potential can be realized with the support of skilled professional personnel in the specialized health fields.

The Department of Allied Health Sciences offers the educational opportunities and clinical experience to prepare the health professional. The student must be prepared and willing to accept a multifaceted role as a member of the health care team — as administrator, planner, consultant, educator, researcher, and practitioner. Professional competence is built upon a solid grounding in the humanities, social sciences and natural sciences. The programs are designed to include not only the development of skills to assure excellence in quality of health care but such experiences and factual knowledge as will provide the basis for continuing intellectual and professional growth.

Graduates are prepared for positions in hospitals, medical and hospital laboratories, outpatient facilities, research centers, clinics and in local, state and national health agencies and departments.

The first two years of study in allied health sciences constitute a specified preprofessional program of basic education similar, but not identical, for all programs. The student then completes the professional phase of the program of his choice. **Admission to study in this department does not constitute admission to the professional year(s).** Such admission is dependent upon the student's performance prior to this stage in his education and the availability of openings in the clinical facility. Separate application to the department must

be made for the professional portion of the program at least six months, but no more than one year, prior to the time the student is ready for admission.

Application deadline is April 1. The student will be eligible to make application for admission if he anticipates completing 90 quarter hours of college work by the September following his application. A minimum grade point of 2.5 is normally required to be considered. Each applicant will be notified in writing as to whether or not he has been accepted.

ALLIED HEALTH SCIENCES — courses are designed in key areas of health services, including administration, community health services, health law and ethics, planning, implementation, and evaluation. Graduate level courses are available. No degree is offered at this time.

MEDICAL RECORD ADMINISTRATION — the development, maintenance and administration of systems of storage, retrieval and release of patient health information.

MEDICAL TECHNOLOGY — the identification of the nature and causes of disease through the use of precision instruments in the examination and analysis of samples of body fluids and tissues.

RADIOLOGIC TECHNOLOGY — the operation of x-ray machines as diagnostic aids of broken bones, fractured skulls, diseases of the heart and lungs, cancer of the breast, brain tumors, and many other diseases; use of radiation from x-ray machines and other sources of radioactivity for therapeutic purposes under the direction of a physician skilled in radiology.

RESPIRATORY THERAPY — the treatment, management, control and care of patients with deficiencies and abnormalities associated with the breathing process through the therapeutic use of such aids as medical gases, oxygen administering apparatus, aerosols, chest physical therapy, cardiopulmonary resuscitation and mechanical airways.

Required courses leading to the Bachelor of Science degree in Medical Record Administration, Medical Technology, Radiologic Technology, and Respiratory Therapy are identified in the course listings which follow. The degree in Medical Technology will be awarded upon completion of the University's didactic program and an affiliated clinical program approved by the American Medical Association's Council of Medical Education, the American Society of Clinical Pathologists and the American Society for Medical Technology. The program in Respiratory Therapy is approved by the Council on Medical Education of the American Medical Association in collaboration with the American Association for Respiratory Therapy, the American College of Chest Physicians, and the American Society of Anesthesiologists. The program in Medical Record Administration is approved by the Council on Medical Education of the American Medical Association in cooperation with the Education and Registration Committee of the American Medical Record Association.

Program accreditation in Radiologic Technology has been applied for and approval by the Joint Review Council is anticipated.

BACHELOR OF SCIENCE: MEDICAL RECORD ADMINISTRATION

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See pages 63-64)
3. Required Courses
(See page 139 for college requirements)

AHS 305	Medical Terminology	5 hours
AHS 320	Health Services Organization	3 hours
AHS 350	Health Law	3 hours
AHS 410	Community and Public Health Service	4 hours
AHS 420	Supervisory Management for Health Services Agencies	3 hours
AHS 440, 441	Fundamentals of Medicine I & II	8 hours
AHS 486	History and Future of Health Care	3 hours
AHS 495	Research Methods	3 hours
BIOL 110	Basic Biology	5 hours
COM 311	Business and Professional Communication	4 hours
COMP 303	Computer Fundamentals for Business Application I	3 hours
COMP 484	Health Information Systems	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 107	College Algebra and Trigonometry	5 hours
MGMT 301	Management and Organization Behavior	3 hours
MGMT 311	Human Behavior and Interpersonal Relations	3 hours
MGMT 364	Personnel Management	4 hours
MGMT 402	Decision Systems Analysis	4 hours
MRA 300	Medical Record Administration	3 hours
MRA 301	Evaluation of Patient Care	5 hours
MRA 302	Coding and Indexing Procedures	5 hours
MRA 370, 371	Directed Experience I & II	2 hours
MRA 403	Health Care Records	5 hours
MRA 421	Analysis of Medical Record Department Operations	3 hours
MRA 422	Medical Care Evaluation	3 hours
MRA 472, 473	Directed Experience III & IV	4 hours
MRA 474	Management Affiliation	4 hours
MRA 492	Medical Record Seminar	3 hours
STAT 201	Principles of Statistics	4 hours
ZOOL 324	Human Anatomy	5 hours
ZOOL 334	Human Physiology	5 hours
4. Restricted Electives None
5. Electives 16 hours

Total Quarter Hours Required **187**

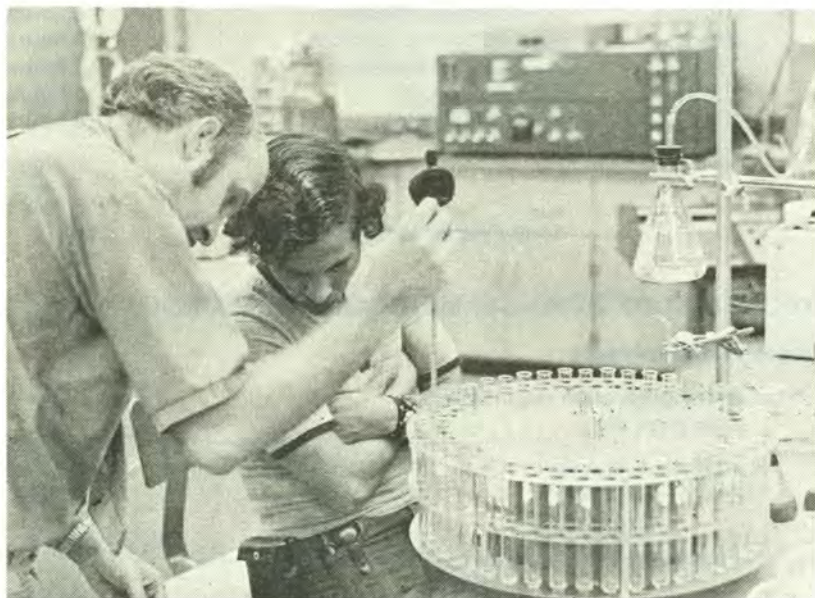
BACHELOR OF SCIENCE: MEDICAL TECHNOLOGY

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See pages 63-64)
3. Required Courses
(See page 139 for college requirements)

AHS 330	Interpretation of Clinical Tests	3 hours
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BIOL 110	Basic Biology	5 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II and III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 321, 322, 323	Organic Chemistry I, II and III	10 hours
CHEM 341	Clinical Biochemistry	3 hours
CHEM 355	Clinical Analytical Chemistry	5 hours
ENG 310	Professional Report Writing II	3 hours
MEDT 340	Techniques in Clinical Microscopy	3 hours
MEDT 341	Techniques in Clinical Chemistry	4 hours
MEDT 342	Hematology	4 hours
MEDT 343	Immunohematology and Coagulation	4 hours
MEDT 401, 402, 403, 404	Clinical Practice I, II, III and IV	16 hours
MEDT 440	Clinical Pathogenic Microbiology	4 hours
MEDT 441, 442	Advanced Clinical Chemistry I and II	7 hours
MEDT 443	Clinical Immunohematology	4 hours
MEDT 444	Advanced Hematology and Coagulation	4 hours
MEDT 445	Clinical Mycology	2 hours
MEDT 446	Clinical Parasitology	3 hours
MEDT 447	Clinical Serology	3 hours
MGMT 301	Management and Organization Behavior	3 hours
MICR 200	General Microbiology	4 hours
MICR 300	Biology of Microorganisms	5 hours
MICR 320	Pathogenic Microbiology	4 hours
MICR 381	Immunology	3 hours
PHYS 201, 202	College Physics I and II	8 hours
STAT 201	Principles of Statistics	4 hours
ZOOL 334	Human Physiology	5 hours
4. Restricted Electives		
AHS 320	Health Services Organization	3 hours
or		
AHS 420	Supervisory Management for Health Services Agencies	
MATH	Two mathematics courses numbered 106 or higher are required	7 hours
5. Electives		None
Total Quarter Hours Required		187



BACHELOR OF SCIENCE: RADIOLOGIC TECHNOLOGY

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses
(See page 139 for College requirements)

AHS 301	U. S. Health Care Systems	3 hours
AHS 320	Health Services Organization	3 hours
BIOL 110	Basic Biology	5 hours
CHEM 111	General Chemistry (Fundamentals)	5 hours
CHEM 112	General Chemistry (Organic)	3 hours
CHEM 113	General Chemistry (Biochemistry)	3 hours
CHEM 115	General Chemistry Laboratory (Organic-Biochemistry)	1 hour
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
COMP 303	Computer Fundamentals for Business Application I	3 hours
COMP 484	Health Information Systems	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 106	College Algebra	4 hours
MGMT 301	Management and Organization Behavior	3 hours
MICR 200	General Microbiology	4 hours
PHYS 201, 202	College Physics I & II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
RTE 340	Fundamentals of Radiologic Technology	3 hours
RTE 342	Directed Clinical Education I	3 hours
RTE 350	Radiographic Procedures	4 hours
RTE 352	Directed Clinical Education II	3 hours
RTE 360	Radiographic Quality Control	4 hours
RTE 362	Directed Clinical Education III	3 hours
RTE 380	Radiologic Technology Physics	4 hours
RTE 382	Directed Clinical Education IV	3 hours
RTE 440	Special Radiographic Procedures	3 hours
RTE 442	Directed Clinical Education V	3 hours
RTE 450	Therapy-Nuclear Medicine Techniques	4 hours
RTE 452	Directed Clinical Education VI	3 hours
RTE 454	Clinical Practice I	3 hours
RTE 460	Radiographic Education-Administration	5 hours
RTE 462	Directed Clinical Education VII	4 hours
RTE 464	Clinical Practice II	3 hours
RTE 480	Radiologic Technology Analysis	5 hours
RTE 482	Directed Clinical Education VIII	4 hours
RTE 484	Clinical Practice III	4 hours
STAT 301	Fundamentals of Probability and Statistics	4 hours
ZOOL 100	General Zoology	4 hours
ZOOL 324	Human Anatomy	5 hours
ZOOL 334	Human Physiology	5 hours
4. Restricted Electives None
5. Electives 3 hours

Total Quarter Hours Required

188

BACHELOR OF SCIENCE: RESPIRATORY THERAPY

Degree Requirements

1. University graduation requirements
(See page 46)

2. Environmental Studies Program

(See pages 63-64)

3. Required Courses

(See page 139 for college requirements)

AHS 330	Interpretation of Clinical Tests	3 hours
BIOL 110	Basic Biology	5 hours
CHEM 111	General Chemistry (Fundamentals)	5 hours
CHEM 112	General Chemistry (Organic)	3 hours
CHEM 113	General Chemistry (Biochemistry)	3 hours
CHEM 115	General Chemistry Laboratory (Organic-Biochemistry)	1 hour
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
ENG 310	Professional Report Writing II	3 hours
MICR 200	General Microbiology	4 hours
MICR 320	Pathogenic Microbiology	4 hours
PHYS 201, 202	College Physics I & II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
RTH 301, 302	Clinical Practice I & II	4 hours
RTH 330	Cardiopulmonary Resuscitation	3 hours
RTH 331	Cardiopulmonary Resuscitation Laboratory	1 hour
RTH 340	Introduction to Pharmacology	3 hours
RTH 350	Introduction to Respiratory Equipment	3 hours
RTH 351	Respiratory Equipment Laboratory	1 hour
RTH 352	Respiratory Equipment Function	3 hours
RTH 353	Respiratory Equipment Function Laboratory	1 hour
RTH 370	Pulmonary Physiology	3 hours
RTH 371	Pulmonary Physiology Laboratory	1 hour
RTH 380	Respiratory Pathology	3 hours
RTH 381	Respiratory Pathology Laboratory	1 hour
RTH 401, 402, 403	Clinical Practice III, IV and V	6 hours
RTH 410	Pulmonary Rehabilitation	2 hours
RTH 420	Respiratory Pediatrics	3 hours
RTH 430	Cardiopulmonary Therapy	3 hours
RTH 431	Cardiopulmonary Therapy Laboratory	1 hour
RTH 440, 442	Medical Pharmacology I and II	6 hours
RTH 460	Medicine	3 hours
RTH 461	Selected Topics in Respiratory Therapy	1 hour
RTH 462	Pulmonary Function Studies	3 hours
RTH 463	Pulmonary Function Laboratory	1 hour
STAT 201	Principles of Statistics	4 hours
ZOOL 100	General Zoology	4 hours
ZOOL 324	Human Anatomy	5 hours
ZOOL 334	Human Physiology	5 hours

4. Restricted Electives

AHS	To be selected in consultation with the student's advisor	6 hours
MATH	Two mathematics courses numbered 106 or higher are required	8 hours

5. Electives

9 hours

Total Quarter Hours Required

187

DEPARTMENT OF BIOLOGICAL SCIENCES

Chairman: D. Vickers, BL 211, Phone 275-2141

Faculty: Charba, Ehrhart, Ellis, Gennaro, Koevenig, Kuhn, Miller, Osborne, Snelson, Stout, Sweeney, Sweet, Taylor, Washington, White, Whittier, Wodzinski.

The Department of Biological Sciences offers a Bachelor of Science in Biological Science with options in biology, botany, fresh water

ecology, microbiology and zoology, as well as the Master of Science in Biological Science.

In an age when new discoveries are reported daily on both celestial and molecular levels, the study of living organisms has gained new importance among the sciences. Students in the life sciences find themselves increasingly in demand in teaching and many phases of research. The program in biological science allows for the selection of an option in biology for those students seeking a broad and varied background; or botany, the study of plants; or freshwater ecology, the study of the environment of inland waters; or microbiology, the study of bacteria and viruses; or zoology, the study of animals. Through the judicious selection of electives in consultation with a faculty advisor, a subspecialty, such as physiology, may be emphasized in one or more of the options outlined above.

BACHELOR OF SCIENCE: BIOLOGICAL SCIENCE

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses
(See page 139 for college requirements)

BIOL 110	Basic Biology	5 hours
BIOL 332	Cell Physiology	
or		4-5 hours
MICR 430	Microbial Physiology	
BIOL 350	Principles of Ecology	4 hours
BIOL 360	Genetics	4 hours
BOT 100	General Botany	4 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II and III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II and III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
ENG 310	Professional Report Writing II	3 hours
MICR 200	General Microbiology	4 hours
PHYS 201, 202	College Physics I and II	8 hours
STAT 301	Fundamentals of Probability & Statistics	4 hours
ZOOL 100	General Zoology	4 hours
4. Restricted Electives
(See specialization requirements listed below.)

MATH	To be selected in consultation with advisor from courses numbered 106 or above.	12 hours
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5. Electives
Number of hours varies with the specialization.
Total Quarter Hours Required 187

AREAS OF SPECIALIZATION

(Students desiring to specialize in the areas identified below shall include the following courses in completing degree requirements.)

1. Biology

BOT	To be selected in consultation with advisor from courses numbered 300 or above.	4 hours
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CHEM 351, 352	Analytical Chemistry I, II	
or		6 hours
CHEM 441, 442	Biochemistry I, II	
ZOOL	To be selected in consultation with advisor from courses numbered 300 or above	4 hours
Biological Sciences	BIOL, BOT, MICR or ZOOL courses selected in consultation with the student's advisor	16 hours
2. Botany		
BIOL 455	Community Ecology	4 hours
BOT 320	Comparative Morphology of Plants	
or		4-5 hours
BOT 325	Plant Anatomy	
BOT 345	Plant Taxonomy	5 hours
BOT 430	Plant Physiology	4 hours
BOT	To be selected in consultation with advisor from BOT courses numbered 300 or above.	8 hours
CHEM 351, 352	Analytical Chemistry I, II	
or		
CHEM 441, 442	Biochemistry I, II	6 hours
or		
Biological Sciences	BIOL, BOT, MICR or ZOOL courses approved by the student's advisor.	
Biological Sciences	BIOL, BOT, MICR or ZOOL courses approved by the student's advisor.	6 hours
3. Freshwater Ecology		
BIOL 450	Limnology	5 hours
BIOL 451	Freshwater Systems	5 hours
BOT 441	Freshwater Algae	4 hours
COMP 102	Computer Programming	3 hours
ZOOL 442	Invertebrate Zoology	5 hours
ZOOL 445	Ichthyology	4 hours
Biological Sciences	BIOL, BOT, CHEM, MICR or ZOOL courses approved by the student's advisor	8 hours
Chemistry		
4. Microbiology		
CHEM 351, 352	Analytical Chemistry I, II	6 hours
CHEM 441, 442	Biochemistry I, II	6 hours
MICR 300	Biology of Microorganisms	5 hours
MICR 320	Pathogenic Microbiology	4 hours
MICR 381	Immunology	3 hours
MICR 382	Serology	3 hours
MICR 430	Microbial Physiology	4 hours
MICR 422	Microbiology of Water and Waste	
or		4 hours
MICR 451	Microbial Ecology	
MICR 410	Diagnostic Microbiology	
or		4 hours
MICR 440	Determinative Microbiology	
5. Zoology		
BIOL 463	Organic Evolution	3 hours
ZOOL 326, 327	Comparative Vertebrate Anatomy I, II	8 hours
ZOOL 340	Vertebrate Zoology	4 hours
ZOOL 430	Animal Physiology	5 hours
ZOOL 442	Invertebrate Zoology	5 hours
ZOOL	Courses numbered 300 or above approved by the student's advisor.	8 hours

DEPARTMENT OF CHEMISTRY

Chairman: G. Baker, SC 117, Phone 275-2246

Faculty: Clausen, Cunningham, Hertel, Idoux, Juge, Knudson, Kujawa (Geology), Madsen, Mattson, McGee (Forensic Science), Youngblood.

The Department of Chemistry offers a Bachelor of Science in Chemistry, Bachelor of Science in Forensic Science, and the Master of Science in Industrial Chemistry.

The chemistry curriculum provides the student with an opportunity to develop his ability to think creatively in a dynamic field of human endeavor. Because chemists contribute to a broad spectrum of man's efforts to understand and control his physical environment, the student of chemistry has considerable latitude in his choice of a career. Completion of this program, accredited by the American Chemical Society, provides access to a number of career opportunities in industry, government service, or education. Positions may entail basic or applied research, product development or control, sales, management or teaching. The program may lead to further study at the graduate level in analytical, biological, inorganic, organic, physical, or industrial chemistry or in related scientific areas. With appropriate choice of electives it also constitutes excellent preparation for the professional schools of dentistry, medicine, pharmacy, or veterinary medicine.



BACHELOR OF SCIENCE: CHEMISTRY

Degree Requirements

1. University graduation requirements
(see page 46)
2. Environmental Studies Program
(see page 63)
3. Required Courses
(See page 139 for college requirements)
CHEM 261, 262, 263 Chemistry Fundamentals I, II and III 10 hours

CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, and III	10 hours
CHEM 324, 325	Organic Laboratory Techniques I and II	4 hours
CHEM 351, 352	Analytical Chemistry I and II	6 hours
CHEM 361, 362, 363	Physical Chemistry I, II, and III	11 hours
CHEM 364, 365	Physical Chemistry Laboratory I and II	4 hours
CHEM 431	Inorganic Chemistry	4 hours
CHEM 451	Advanced Analytical Laboratory Technique	5 hours
CHEM 497	Undergraduate Research	6 hours
ENG 310	Professional Report Writing II	3 hours
MATH 211	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus I, II, and III	12 hours
MATH 324	Intermediate Calculus	4 hours
PHYS 211 212, 213	General Physics, I, II, and III	12 hours
PHYS 282, 283	General Physics Laboratory I and II	2 hours
STAT 301	Fundamentals of Probability and Statistics	4 hours
4. Restricted Electives		
a. Biological Sciences		12 hours
b. COMP 102	Computer Programming	
or		3 hours
COMP 302	Programming and Numerical Methods	
c. PHYS 380	Physics of Scientific Instruments	
or		4 hours
PHYS 381	Physics Laboratory — Electronics	
d. Any three		
CHEM 421	Advanced Organic Chemistry I	3 hours
CHEM 422	Advanced Organic Chemistry II	3 hours
CHEM 441	Biochemistry I	3 hours
CHEM 442	Biochemistry II	3 hours
CHEM 450	Analytical Methods Development	3 hours
CHEM 461	Advanced Physical Chemistry	3 hours
CHEM 471	Nuclear and Radiochemistry	3 hours
CHEM 475	Concepts in Industrial Chemistry	3 hours

5. Electives

Two years of German is recommended for those students intending to pursue graduate studies.

Total Quarter Hours Required 189

FORENSIC SCIENCE PROGRAM

Forensic science is the profession which serves the scientific needs of the justice system. Within the forensic science profession there are several subspecialties. The Forensic Science program at FTU has been specifically designed to provide the student with an educational background in two subspecialties: Criminalistics or Civilistics.

The principal job of the forensic scientist is to scientifically examine physical evidence gathered at the scene of a suspect criminal action or in connection with a civil action involving two or more parties. The criminalist may work on physical evidence such as blood, hairs, fibers, or pharmaceutical and clandestine drug preparations. The civilist may work on suspect air and water pollution samples, patent medicine formulations, or faulty equipment suspect of being in violation of consumer protection standards. Regardless of the type of physical evidence examined, once the examination has been com-

pleted the forensic scientist must be prepared to present his findings in the courtroom. Normally, the criminalist will testify in a court of criminal law; the civilist in a court of civil law.

The scientific tools which the forensic scientist uses to examine physical evidence may be chemical, instrumental, botanical, morphological, microscopic, complex, simple, or just plain common-sensical. Regardless of the type of physical evidence submitted, the forensic scientist uses the tools best suited to provide the information necessary to make a valuation for court presentation. Through an educational program such as this one the student learns how to use these tools in the personal valuation process so important to the job of the forensic scientist.

BACHELOR OF SCIENCE: FORENSIC SCIENCE

Degree Requirements

1. University graduation requirements

(see page 46)

2. Environmental Studies Program

(see page 63)

3. Required Courses

(see page 139 for college requirements)

BIOL 110	Basic Biology	5 hours
BOT 100	General Botany	4 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II and III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, and III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
CHEM 351, 352	Analytical Chemistry I and II	6 hours
COED 300	Cooperative Education, Junior Year	0 hours
COMP 102	Computer Programming	3 hours
ENG 310	Professional Reporting Writing II	3 hours
FSC 301	Criminalistics I	4 hours
FSC 356	Forensic Analysis Techniques	4 hours
FSC 470	Forensic Science Internship	8 hours
LES 376	Criminal Law and the Paraprofessional	4 hours
MATH 107	College Algebra & Trigonometry	5 hours
MATH 320	Concepts of Calculus	4 hours
MICR 200	General Microbiology	4 hours
PHYS 201, 202	College Physics I and II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
STAT 301	Fundamentals of Probability & Statistics	4 hours

4. Restricted Electives

Depending upon the area of specialization (Civilistic or Criminalistic), a student will select in consultation with his/her advisor, 36 or 37 hours of course work from science, forensic science, criminal justice, or allied legal services.

5. Electives

Total Quarter Hours Required

180

AREAS OF SPECIALIZATION

1. Civilistics. Students desiring to specialize in this area will be required to take the following additional course work:

FSC 305	Civilistics	4 hours
LES 301	Law & Society	4 hours

They will be required to complete 37 hours of restricted elective course work from the previously mentioned areas.

2. Criminalistics. Students desiring to specialize in this area will be required to take the following additional course work:

CRJ 301	Criminal Law in Action	4 hours
FSC 302	Criminalistics II	4 hours

They will be required to complete 36 hours of restricted elective course work from the previously mentioned areas.

DEPARTMENT OF MATHEMATICAL SCIENCES

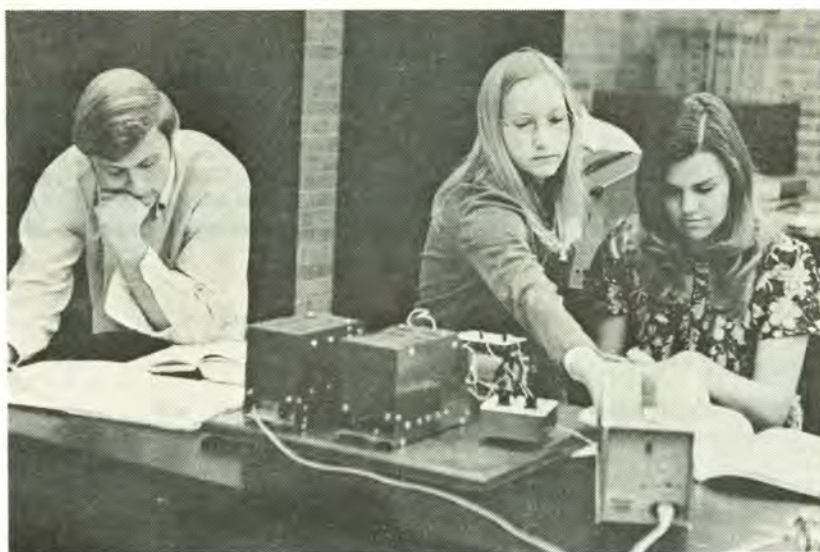
Chairman: *T. Frederick, FA 461-B, Phone 275-2341*

Faculty: *Andrews, Anthony, Armstrong, Barr, Brigham, Caron, A. Dutton, R. Dutton, Gerber, Heinzer, Hurst, Ingram, Jones, Lang, Norman, O'Hara, Ostle, Pettofrezzo, Rautenstrauch, Rhein, Rodriguez, Salzmann, Sherwood, Somerville, Taylor, Wagner*

The Department of Mathematical Sciences offers courses and programs leading to Bachelor of Science degrees in Computer Science, Mathematics and Statistics. Emphasis is placed on the dual nature of the mathematical sciences; theoretical on the one hand and practical on the other. The department also offers work leading to a Master of Science in Computer Science and a Master of Science in Mathematical Science. (See pages 153-155 for the M.S. in Computer Science and see pages 155-156 for the M.S. in Mathematical Science.)

Courses in the mathematical sciences at Florida Technological University are designed to serve (1) those who want to become professional computer scientists, mathematicians or statisticians; (2) those who want to prepare for, or undertake, graduate work in the mathematical sciences or related fields; (3) those who need to use the mathematical sciences as tools in their specialty areas; (4) those who intend to teach mathematical sciences in secondary schools, colleges and universities.

The Department of Mathematical Sciences facilities includes a Varian-73 computer for the exclusive "hands-on" use of undergraduate students, graduate students and faculty who are participating in the mathematical sciences programs via course work and/or research. The Varian-73 minicomputer has 24K (K=1024) 16-bit words of core memory and 256 words of writable control storage for microprogram-



ming. Input/output (I/O) peripheral device equipment consists of two magnetic disc units, two magnetic cassette type units, two teletype terminals, a card reader and a line printer. A card punch and graphics equipment are scheduled to be added in the near future. In addition, 22 desk calculators, three of which are programmable, are available.

All mathematical sciences majors also have access through the Central Florida Regional Data Center (CFRDC) to the main computer, an IBM 360 model 75 with one megabyte of fast core and two megabytes of slower core. Students have remote batch access to this system through Data 100 I/O equipment located in the computer center. Interactive processing may be done through one of the ten IBM 2741 terminals, a Textronic graphic terminal or one of two IBM 1050 terminals.

BACHELOR OF SCIENCE: COMPUTER SCIENCE

Degree Requirements

1. University graduation requirements
(See page 46)
 2. Environmental Studies Program
(See page 63)
 3. Required Courses
(See page 139 for college requirements)

COMP 205-206	Algorithmic Processes I, II	6 hours
COMP 305	Assembly Language Programming Laboratory	4 hours
COMP 306	Computers and Programming	4 hours
COMP 307	Algorithmic Processes III	3 hours
COMP 405	Data Structures	4 hours
EECS 311	Introduction to Digital Circuits	4 hours
MATH 321, 322, 323	Calculus I, II, III	12 hours
PHYS 211, 212	General Physics I, II	8 hours
PHYS 282	General Physics Laboratory I	1 hour
 4. Restricted Electives

STAT 341	Mathematical Statistics I	
or		
STAT 401	Statistical Methods I	4 hours

 and a minimum of 42 quarter hours of courses selected from one of the four areas of specialization.
 5. Electives
The number of hours varies with the specialization.
- Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. General Computer Science. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)

COMP 331	Discrete Structures in Computer Science	4 hours
COMP 361	Numerical Calculus	4 hours
COMP 401	Computer Organization I	4 hours
COMP 411	Systems Programming I	4 hours
MATH 324	Intermediate Calculus	4 hours

Group B (A minimum of 16 hours)

COMP 387	Computer Programming with Business Applications	3 hours
COMP 388	Advanced COBOL	3 hours

COMP 408	Programming Languages I	4 hours
COMP 521	Compiler Structure I	3 hours
ENGR 442	Operations Research	3 hours
IEMS 432	Systems Simulation with Digital Computers	3 hours
MATH 317	Matrices	4-8 hours
or		
MATH 318, 319	Linear Algebra I, II	
MATH 331	Differential Equations	4 hours
or		
MATH 431	Ordinary Differential Equations I	
STAT 341, 342	Mathematical Statistics I, II	8 hours
STAT 401, 402	Statistical Methods I, II	8 hours

Group C

COMP, MATH or STAT courses numbered 400 or above.

2. Programming and Systems. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)

COMP 401	Computer Organization I	4 hours
COMP 408	Programming Languages I	4 hours
COMP 411	Systems Programming I	4 hours
STAT 401, 402	Statistical Methods I and II	8 hours

Group B (A minimum of 17 hours)

COMP 331	Discrete Structures in Computer Science	4 hours
COMP 361	Numerical Calculus	4 hours
COMP 387	Computer Programming with Business Applications	3 hours
COMP 388	Advanced COBOL	3 hours
COMP 481	Computer Processing of Statistical Data	4 hours
COMP 521, 522	Compiler Structure I, II	6 hours
EMCS 431	Mini-Computers in Engineering	3 hours
IEMS 432	System Simulation with Digital Computers	3 hours
MATH 317	Matrices	4-8 hours
or		
MATH 318, 319	Linear Algebra I, II	
MATH 324	Intermediate Calculus	4 hours
MATH 331	Differential Equations	4 hours
or		
MATH 431	Ordinary Differential Equations I	

Group C

COMP, MATH or STAT courses numbered 400 or above.

3. Scientific Applications Programming. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)

COMP 331	Discrete Structures in Computer Science	4 hours
COMP 361	Numerical Calculus	4 hours
MATH 317	Matrices	4-8 hours
or		
MATH 318, 319	Linear Algebra I, II	
MATH 324	Intermediate Calculus	4 hours
MATH 331	Differential Equations	4 hours
or		
MATH 431	Ordinary Differential Equations I	

Group B (A minimum of 14 hours)

COMP 401	Computer Organization I	4 hours
COMP 408	Programming Languages I	4 hours
COMP 411	Systems Programming I	4 hours
COMP 561	Numerical Analysis I	4 hours
ENGR 442	Operations Research	3 hours

IEMS 432	System Simulation with Digital Computers	3 hours
STAT 341, 342	Mathematical Statistics I, II	8 hours
STAT 401, 402	Statistical Methods I, II	8 hours

Group C

COMP, MATH OR STAT courses numbered 400 or above.

4. Business Applications Programming. Students desiring to specialize in the area must complete a minimum of 42 hours, as follows:

Group A (All courses listed)

COMP 387	Computer Programming with Business Applications	3 hours
COMP 388	Advanced COBOL	3 hours
COMP 487, 488, 489	Computer Processing of Business Data I, II, III	9 hours

Group B (A minimum of 21 hours with at least 3 courses selected from [1] and at least 2 courses from [2])

[1]

COMP 401	Computer Organization I	4 hours
COMP 408	Programming Languages I	4 hours
COMP 411	Systems Programming I	4 hours
COMP 481	Computer Processing of Statistical Data	4 hours
MATH 317	Matrices	4 hours
or		4-8 hours
MATH 318, 319	Linear Algebra I, II	
STAT 341, 342	Mathematical Statistics I, II	8 hours
STAT 401, 402	Statistical Methods I, II	8 hours

[2]

ACCY 300	Financial Accounting	5 hours
ACCY 310	System Concepts and Management Accounting	5 hours
FIN 301	Finance	5 hours
MGMT 301	Management and Organization Behavior	3 hours
MGMT 311	Human Behavior and Interpersonal Relationships	3 hours
MKTG 301	Marketing	5 hours

Group C

COMP, MATH or STAT courses numbered 400 or above.

BACHELOR OF SCIENCE: MATHEMATICS

Degree Requirements

1. University graduation requirements
(See page 46)

2. Environmental Studies Program
(See page 63)

3. Required Courses

(See page 139 for college requirements)

MATH 211	Analytic Geometry	3 hours
MATH 271	Logic and Proof in Mathematics	4 hours
MATH 318, 319	Linear Algebra I, II	8 hours
MATH 321, 322, 323	Calculus I, II, III	12 hours
MATH 324	Intermediate Calculus	4 hours
MATH 421, 422, 423	Introduction to Analysis I, II, III	12 hours
MATH 431	Ordinary Differential Equations I	4 hours

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|-----------------------|---|----------|
| PHYS 211,
212, 213 | General Physics I, II, III | 12 hours |
| PHYS 282, 283 | General Physics Laboratory I, II | 2 hours |
| STAT 301 | Fundamentals of Probability and
Statistics | 4 hours |
| STAT 341, 342 | Mathematical Statistics I, II | 8 hours |
4. Restricted Electives
- Group A** (All courses listed)
- | | | |
|---------------|-----------------------------|-----------|
| COMP 205, 206 | Algorithmic Processes I, II | 3-6 hours |
| or | | |
| COMP 301 | Computing Processes | 4 hours |
| MATH 411 | Algebraic Structures I | |
| or | | |
| MATH 461 | Topology I | |
- Group B** (A minimum of 12 hours)
- | | | |
|----------|--|---------|
| COMP 331 | Discrete Structures in Computer Science | 4 hours |
| COMP 361 | Numerical Calculus | 4 hours |
| COMP 481 | Computer Processing of Statistical Data | 4 hours |
| COMP 561 | Numerical Analysis I | 4 hours |
| COMP 565 | Scientific Applications Concepts | 4 hours |
| EMCS 460 | Optimum Seeking Methods | 3 hours |
| ENGR 421 | Linear Control Systems | 4 hours |
| ENGR 442 | Operations Research | 3 hours |
| MATH | Courses numbered 300 or above <i>except</i> | |
| STAT | the following: MATH 301, 311, 312, 320,
331, 351, 420, 428, 429 | |
5. Electives
- The number of hours varies with the restricted electives chosen.
- | | |
|------------------------------|-----|
| Total Quarter Hours Required | 180 |
|------------------------------|-----|

BACHELOR OF SCIENCE: STATISTICS

Degree Requirements

- University graduation requirements
(See page 46)
- Environmental Studies Program
(See page 63)
- Required Courses
(See page 139 for college requirements)

COMP 205, 206	Algorithmic Processes I, II	6 hours
COMP 361	Numerical Calculus	4 hours
COMP 481	Computer Processing of Statistical Data	4 hours
MATH 211	Analytic Geometry	3 hours
MATH 271	Logic and Proof in Mathematics	4 hours
MATH 317	Matrices	4 hours
MATH 321 322, 323	Calculus I, II, III	12 hours
MATH 324	Intermediate Calculus	4 hours
PHYS 211, 212, 213	General Physics I, II, III	12 hours
PHYS 282, 283	General Physics Laboratory I, II	2 hours
STAT 301	Fundamentals of Probability and Statistics	4 hours
STAT 332	Statistical Quality Control	3 hours
STAT 341, 342	Mathematical Statistics I, II	8 hours
STAT 401, 402	Statistical Methods I, II	8 hours
STAT 411	Experimental Design	3 hours
STAT 415	Regression Analysis	4 hours
STAT 421	Survey Design	3 hours

4. Restricted Electives (A minimum of 16 hours)

COMP 331	Discrete Structures in Computer Science	4 hours
COMP 561	Numerical Analysis I	4 hours
COMP 565	Scientific Applications Concepts	4 hours
EMCS 460	Optimum Seeking Methods	3 hours
ENGR 421	Linear Control Systems	4 hours
ENGR 442	Operations Research	3 hours
MATH	Courses numbered 300 or above <i>except</i>	
STAT	the following: MATH 301, 311, 312, 320, 331, 351, 420, 428, 429	
5. Electives

The number of hours varies with restricted electives chosen.

Total Quarter Hours Required	180
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DEPARTMENT OF PHYSICS

Chairman: J. Noon, EN 312, Phone 275-2325

Faculty: Bates, Bolemon, Bolte, Brennan, Henderson, Katzin, Oelfke

The Department of Physics offers the Bachelor of Science degree in physics.

Physics is a basic science fundamental to many different fields of endeavor and the courses offered are designed to reflect this. Physics majors who wish to prepare for an interdisciplinary type of career may use electives to study other areas of science in depth. In general, programs of electives related to possible future careers, should be planned before the beginning of the sophomore year and no later than the junior year. Transfer students, however, will be advised on arrival in this regard.

A complete physics program requires both lecture and laboratory courses. In lectures a wide range of physical phenomena, theoretical explanations and analysis techniques are discussed. In laboratory work, students make observations and measurements and analyze data obtained. At the upper division, independent investigation and the use of modern scientific instrumentation (such as lasers, lock-in amplifiers, multichannel analyzers, nuclear counters, oscilloscopes, radiation detectors, spectrometers and vacuum leak sensors) are emphasized. Students planning graduate study should consult their faculty advisors about increased course content in upper level physics courses. Planning to allow a double major will be encouraged where appropriate. A number of elective 400 level courses will be offered on an alternate year basis; in addition extra courses (e.g., advanced mechanics or quantum mechanics, gravitation, relativity, lasers, plasma physics, electromagnetic theory, elementary particles, nonlinear optics; and laboratory work in lasers, nonlinear optics, millimeter waves, and solar energy) will be provided on demand for individual students using either special topics, independent study or personalized instruction modes. General courses such as astronomy, physical science, physics in society, or physics of science fiction cannot be included to satisfy requirements for the major, although an interdisciplinary course such as biophysics could be appropriate.

Research interests of the faculty include astrophysics, atmospheric electricity, biophysics, computing, instrumentation, lasers, mathematical modelling, nuclear physics, optics, plasmas, radio-astronomy, solar energy.

BACHELOR OF SCIENCE: PHYSICS

Degree Requirements

1. University graduation requirements
(See page 46)
2. Environmental Studies Program
(See page 63)
3. Required Courses

The courses listed, or departmentally approved equivalents, are required in the physics curriculum.

(see page 139 for college requirements)

BIOL 110	Basic Biology	5 hours
CHEM 261, 262, 263	Chemistry Fundamentals I	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
COMP 302	Programming and Numerical Methods	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 211	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus I, II, III	12 hours
MATH 324	Intermediate Calculus	4 hours
MATH 331	Differential Equations	4 hours
PHYS 211, 212, 213	General Physics I, II, and III	12 hours
PHYS 282, 283	General Physics Laboratory I & II	2 hours
PHYS 311, 312, 313	Intermediate Physics I, II, III	12 hours
PHYS 314, 315	Intermediate Physics IV & V	8 hours
PHYS 343	Computer Methods in Physics I	4 hours
PHYS 344	Modern Physics	3 hours
PHYS 354	Optics and Wave Motion	3 hours
PHYS 380	Physics of Scientific Instruments	4 hours
PHYS 381	Physics Laboratory - Electronics	4 hours
PHYS 382	Intermediate Physics Laboratory I	4 hours
PHYS 492	Physics Seminar	1 hour
STAT 335	Probability & Statistics for Engineers	3 hours

4. Restricted Electives
Upper division PHYS courses or those to be used in partial fulfillment of the requirements of a double major. 9 hours
A second course in Biological Sciences is required. 3 to 5 hours
5. Electives
A plan for use of electives must be approved no later than the junior year by a departmental committee 13 to 15 hours
Total Quarter Hours Required 180

PREPROFESSIONAL PROGRAMS

Preprofessional Coordinator: R. Laird, AD 215, Phone 275-2691

The Office of the Preprofessional Coordinator has been created to operate as a service to all students preparing for and seeking admission to professional schools of dentistry, medicine, optometry, pharmacy and veterinary medicine. The services afforded the student through this office are numerous and range from simple advising and counseling in preprofessional matters to providing a compiled preprofessional evaluation of the student upon his request to each professional school to which he desires to apply. Upon entering the preprofessional program at Florida Technological University, each student

will be assigned to a preprofessional advisor within the academic department of his major. Each student is urged to take full advantage of the services available through this office. Additionally, every preprofessional student should register his intent to pursue preparation for admission to a health-professions school with the Office of the Preprofessional Coordinator. Finally, all preprofessional students are strongly encouraged to affiliate with and participate in the activities of the Preprofessional Medical Society (VC 208).

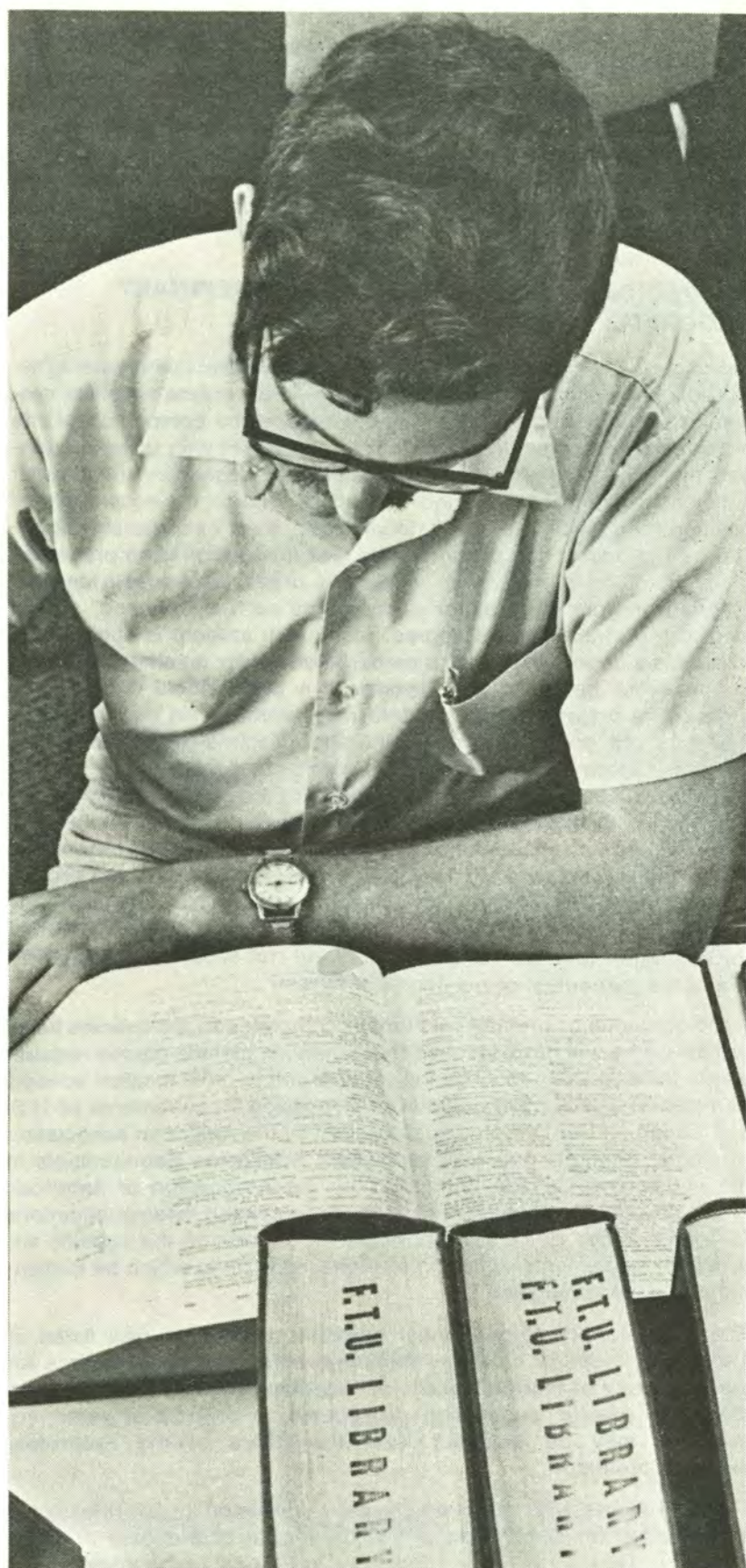
PREMEDICAL, PREDENTAL AND PREVETERINARY PROGRAMS

Although many professional schools accept students who have satisfactorily completed three years of college and possess excellent credentials, a large and growing number require the completion of the baccalaureate degree. In any event, the applicant with given credentials and in possession of the baccalaureate degree by the time of anticipated admission will find himself in a much more competitive position for a place in a professional school than a comparable applicant not in possession of the degree. For this reason each predental, premedical and preveterinary student is urged to choose a degree-granting program for a major since majors such as "premed" do not lead to the awarding of a degree. Also, each student is encouraged to pursue a degree program to prepare himself for an alternate career in the event he is denied a place in a professional school. The prospective preprofessional student may select as his major any degree-granting program offered at Florida Technological University; however, those degree programs within the College of Natural Sciences will lend themselves most easily to the preprofessional preparation due to the nature and content of their curricula. While satisfying his degree requirements, the student will find in his curriculum many courses that are also admission requirements to most professional schools. In addition he will find in his curriculum adequate elective hours which will permit him to obtain other courses required for admission to a professional school but not specifically contained within the curriculum of his degree program.

If the predental or premedical student completes all the courses listed in Table I, he will have satisfied the minimum specific course requirements for admission to all dental schools and to most medical schools as listed in the current editions of Admission Requirements of U.S. and Canadian Dental Schools, published by the American Association of Dental Schools, and Medical School Admission Requirements in the U.S.A. and Canada, published by the Association of American Medical Colleges. Each student is urged to consult these publications (available in the University Bookstore) to determine the specific admission requirements of the professional schools to which he is planning to make application.

The preveterinary student must complete all the courses listed in Table II in order to meet the minimum admission requirements for the University of Florida College of Veterinary Medicine. Information regarding specific application procedures to schools of veterinary medicine may be obtained from the Office of the Preprofessional Coordinator.

Those students who successfully gain admission to a professional school after the completion of the junior year of a degree program within the College of Natural Sciences at Florida Technological Uni-



versity may apply for a Bachelor of Science degree after successfully completing the first year of study (not less than 45 quarter credit hours) with a grade point average of "C" or better at an approved professional school. Following completion of the first year of professional study, the student should request the dean of the professional school to forward to the Dean of the College of Natural Sciences at Florida Technological University a transcript of credits and a recommendation that the degree will be conferred.

TABLE I.
PREDENTAL, PREMEDICAL REQUIREMENTS

BIOL 110	Basic Biology	5 hours
BIOL 332	Cell Physiology	5 hours
BIOL 360	Genetics	4 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II, III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
CHEM 351, 352	Analytical Chemistry I, II	6 hours
CHEM 361	Physical Chemistry	5 hours
ENG 101	Composition	3 hours
ENG 103	Exploring Literature Through Writing	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 211 ¹	Analytic Geometry	3 hours
MATH 321, 322, 323	Calculus I, II, III	12 hours
MICR 200	General Microbiology	4 hours
PHYS 201, 202	College Physics I, II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
STAT 301	Fundamentals of Probability and Statistics	4 hours
ZOOL 100	General Zoology	4 hours
ZOOL 322	Vertebrate Histology	4 hours
ZOOL 326, 327	Comparative Vertebrate Anatomy	8 hours
ZOOL 423	Embryology	5 hours
Foreign Language ²		
Electives ³		

¹Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.

²Proficiency in Russian, German, French, Spanish or another foreign language approved by the student's advisor can be demonstrated by examination or by successful completion of 12 credits of the language.

³Electives should include courses applicable to the student's chosen major and professional goal as well as other courses, selected in consultation with the student's advisor, to complete the Environmental Studies Program. If, after completing all courses required for admission to the professional school and satisfying the degree requirements of the major, the student still has elective hours available, consideration should be given to the following courses: ACCY 211, 212; AHS 305, 320, 350; MGMT 301, 364; PSY 303, 310, 315, 372, 403; SOC 347, 348, 405, 406, 407.

TABLE II.
PREVETERINARY REQUIREMENTS

BIOL 110	Basic Biology	5 hours
BIOL 360	Genetics	4 hours
BOT 100	General Botany	4 hours

CHEM 261, 262, 263	Chemistry Fundamentals I, II, III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
CHEM 351	Analytical Chemistry	3 hours
ENG 101	Composition	4 hours
ENG 103	Exploring Literature Through Writing	
or		3 hours
ENG 208	Principles of Creative Writing	
ENG 310	Professional Report Writing II	3 hours
Cultural and Historical Foundations		
C & H Group I (Landmarks in Western Humanities)		
C & H Group II (Literature; HUM; ART 231; or MUS 320 only)		
C & H Group III (HIST 201, 202, 203, 311, 312, 313)		
MATH 211 ¹	Analytic Geometry	3 hours
MATH 320	Concepts of Calculus	4 hours
MICR 200	General Microbiology	4 hours
MICR 300	Biology of Microorganisms	5 hours
PHYS 201, 202	College Physics I, II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
Social Sciences	Any courses from Social Sciences Gp I & II except COM 100	12 hours
STAT 301	Fundamentals of Probability and Statistics	4 hours
ZOOL 100	General Zoology	4 hours
Animal Science Courses ²		10 hours

¹Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.

²The animal science courses must be taken as a transient student at an approved institution.

PREOPTOMETRY AND PREPHARMACY PROGRAMS

Although not required to pursue a degree-granting program to satisfy admission requirements to professional schools, preoptometry and prepharmacy students are strongly urged to do so. Lists of courses designed to satisfy minimum admission requirements to professional schools of optometry and pharmacy are shown in Tables III and IV, respectively.

TABLE III.
PREOPTOMETRY REQUIREMENTS

BIOL110	Basic Biology	5 hours
BOT 100	General Botany	4 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II, III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
ENG 101	Composition	4 hours
ENG 103	Exploring Literature Through Writing	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 211 ¹	Analytic Geometry	3 hours
MATH 320	Concepts of Calculus	4 hours
MICR 200	General Microbiology	4 hours
MICR 210	Culture Media and Reagents	2 hours

PHYS 201, 202	College Physics I, II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
ZOOL 100	General Zoology	4 hours
Electives ²		27 hours

TABLE IV.
PREPHARMACY REQUIREMENTS

BIOL 110	Basic Biology	5 hours
BOT 100	General Botany	4 hours
CHEM 261, 262, 263	Chemistry Fundamentals I, II, III	10 hours
CHEM 264	Chemistry Fundamentals Laboratory	1 hour
CHEM 265	Analytical Fundamentals	2 hours
CHEM 321, 322, 323	Organic Chemistry I, II, III	10 hours
CHEM 324	Organic Laboratory Techniques I	2 hours
ENG 101	Composition	4 hours
ENG 103	Exploring Literature Through Writing	3 hours
ENG 310	Professional Report Writing II	3 hours
MATH 211 ¹	Analytic Geometry	3 hours
MATH 320	Concepts of Calculus	4 hours
MICR 200	General Microbiology	4 hours
PHYS 201, 202	College Physics I, II	8 hours
PHYS 380	Physics of Scientific Instruments	4 hours
ZOOL 100	General Zoology	4 hours
Electives ³		29 hours

¹Students deficient in algebra and trigonometry must make up this deficiency before enrolling in MATH 211.

²Approved electives may include: ACCY 211, 212; AHS 305, 320, 350, 440, 441; HIST 311, 312, 313; MGMT 301, 364; PSY 201, 202; SOC 201, 202; and other courses selected in consultation with the student's advisor to complete the Basic Program of the Environmental Studies Program.

³Approved electives may include: ACCY 211, 212; AHS 305, 320, 350, 440, 441; CHEM 351, 352; MGMT 301, 364; MICR 200, 300; STAT 301; and other courses selected in consultation with the student's advisor to complete the Basic Program of the Environmental Studies Program.



COLLEGE OF NATURAL SCIENCES

GRADUATE PROGRAMS

Graduate programs leading to a Master of Science degree are available in Biological Science, Computer Science, Industrial Chemistry, and Mathematical Science.

MASTER OF SCIENCE: BIOLOGICAL SCIENCE

Program Coordinator: *J. Koevenig*, BL 202, Phone 275-2141

The Department of Biological Sciences offers graduate work with research and courses in biology, botany, freshwater ecology, microbiology and zoology under three options: (1) Biological Sciences Thesis, (2) Biological Sciences Nonthesis, and (3) Microbiology Thesis. A majority of the graduate level courses are offered in late afternoon or evening to better serve the working student.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)

2. Program Admission Requirements.

Admission is based on the applicant's potential to achieve academic success and become a productive scholar, teacher or research investigator in the Biological Sciences as determined by: letters of recommendation; past research and academic records; GRE verbal and quantitative scores; and applicant's statement of immediate and long range goals. Personal interviews are helpful but are not required. Applicants need not have an undergraduate degree in the Biological Sciences but are expected to have the equivalent of 12 quarter hours credit in biology, 4 in botany, 8 in organic chemistry, 4 in microbiology, 4 in zoology, plus basic college mathematics and statistics.

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites
2. Core Courses: The following courses are required.

BIOL 618	Field Methods for Biology	3 hours
BIOL 619	Laboratory Methods for Biology	3 hours
BIOL 620	Molecular Biology	3 hours
BIOL 560	Genetic Mechanisms	
or		5 hours
BIOL 653	Population Ecology	
BIOL 692	Graduate Seminar	3 hours
3. Restricted Electives: Varies with option (see Area of Specialization).
4. Thesis/Research report: Varies with option (see Area of Specialization).
9-3 hours.
5. Examinations: Final oral over (a) course work and (b) thesis or research report.

6. Other Requirements: None specified.	
Total Quarter Hours Required	45
Thesis Option	54
Nonthesis Option	65
BOR Maximum Hours Allowed	
(see pages 61-62)	

AREAS OF SPECIALIZATION (OPTIONS)

Students must select one of the following three options.

1. Biological Sciences Thesis Option

Required courses beyond core:

BIOL 560	Genetic Mechanisms	5 hours
or		
BIOL 653	Population Ecology	
BIOL 563	Evolutionary Biology	3 hours
BIOL 632	Organismal Physiology	5 hours
BIOL 699	Biology Thesis	9 hours

Restricted electives: additional coursework acceptable to the student's graduate committee.

2. Biological Sciences Nonthesis Option

Required courses beyond core:

BIOL 560	Genetic Mechanisms	5 hours
or		
BIOL 653	Population Ecology	
BIOL 563	Evolutionary Biology	3 hours
BIOL 675	Contemporary Studies in Environmental Biology	4 hours
BOT 549	Plant Biosystematics	5 hours
BOT 647	Field Botany	4 hours
MICR 524	Infectious Process	3 hours
ZOOL 647	Field Zoology	4 hours
BIOL 698	Biology Research Report	3 hours

Restricted electives: additional coursework acceptable to the student's graduate committee. 6 hours

3. Microbiology Thesis Option

Required courses beyond core:

MICR 524	Infectious Process	3 hours
MICR 570	Virology	4 hours
MICR 581	Applied Microbiology	4 hours
MICR 633	Microbial Metabolism	4 hours
MICR 699	Microbiology Thesis	9 hours

Restricted electives; additional coursework acceptable to the student's graduate committee. 4 hours

MASTER OF SCIENCE: INDUSTRIAL CHEMISTRY

Program Coordinator: G. Mattson, SC 329, Phone 275-2209

The Department of Chemistry offers graduate work leading to the Master of Science in Industrial Chemistry. This program is aimed particularly at preparing a student for a career in the chemical industry or in related industries which utilize chemical processing techniques. The primary emphasis is upon chemistry and the application of the theoretical principles of chemistry to the development of products and processes.

ADMISSION REQUIREMENTS

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. Baccalaureate degree from an accredited institution
 - b. Departmental evaluation based upon
 - (1) Transcripts
 - (2) Letters of recommendation
 - (3) Proficiency examinations (Results are used to aid in planning the student's program of study. Deficiencies may require remedial course work.)

University Graduate Policies and Procedures

see page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites:
2. Core Courses: The following courses are required.

CHEM 501,	502, 503	Chemical Structure I, II and III	6 hours
CHEM 504,	505, 506	Chemical Dynamics I, II and III	6 hours
CHEM 507,	508, 509	Chemical Synthesis I, II and III	6 hours
CHEM 671		Separation Processes	3 hours
CHEM 672		Chemical Processes	3 hours
CHEM 673		Process Kinetics and Control	3 hours
CHEM 674		Chemical Process Economics	2 hours
3. Restricted electives: Selected courses in business, computer science, engineering and statistics in keeping with student's particular needs, interests and background and as approved by the advisory committee.
4. Research: The following courses are required.

CHEM 697	Research		11 hours
CHEM 698	Research Report		2 hours
	Total Quarter Hours Required		45
	BOR Maximum Hours Allowed		65

(see pages 61-62)
5. Examinations: Satisfactory completion of a comprehensive examination is required.
6. Other requirements: None specified.

MASTER OF SCIENCE: COMPUTER SCIENCE

Program Coordinator: R. Dutton, FA 411, Phone 275-2341

The Department of Mathematical Sciences offers a degree in Computer Science with an emphasis on the areas of systems programming, computer organization and architecture, and information organization and retrieval. The hands-on use of our computer science laboratory is strongly encouraged. A majority of the graduate level courses are offered in the evening to better serve the working student.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)

2. Program Admission Requirements

An undergraduate degree in computer science is not required but, before a transfer from the initial post-baccalaureate state to regular graduate status is granted, the student must exhibit, to the satisfaction of the Graduate Committee in Computer Science, a thorough understanding of the materials covered in COMP 401, 405, 408 and 411.

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: See admission requirements above.
2. Core Courses: The following courses are required.

COMP 601	Computer Organization II	4 hours
COMP 611	Systems Programming II	4 hours
COMP 617	Information Organization and Retrieval	4 hours
3. Restricted Electives:
 - a. Area of specialization (see below) 6-7 hours
 - b. Other (varies with area of specialization) 17-21 hours
4. Thesis or Research Report 9-6 hours
5. Examinations:
 - a. Written comprehensive examination over the core courses
 - b. Oral defense of thesis or research project
6. Other Requirements: None specified.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	63
(see pages 61-62)	

AREAS OF SPECIALIZATION

1. Information Systems

COMP 655	Information Analysis	3 hours
COMP 656	Information System Design	3 hours
2. Numerical Mathematics

COMP 661	Numerical Analysis II	4 hours
IEMS 624	Operations Research I	3 hours

MASTER OF SCIENCE: MATHEMATICAL SCIENCE

Program Coordinator: E. Norman, FA 452, Phone 275-2341

The masters program in Mathematical Science is designed primarily to prepare students wishing to seek employment in industry, government or education, rather than those desiring to obtain the Ph.D. degree in mathematics. The program is structured so as to develop mathematical scientists who can use the techniques of mathematics, statistics and computer science in the formulation and analysis of mathematical models in the physical, biological and social sciences, as well as in engineering and business. Graduates of the program will be required to demonstrate proficiency in a core of material comprising about 80 percent of the program. This core will emphasize methods of mathematical analysis, applied probability and statistics, and computer analysis. Most of the graduate level courses are offered in the evening to better serve the working student.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
An undergraduate degree in any of the mathematical sciences is not required. However, before a transfer from the initial post-baccalaureate status to regular graduate status is granted, the Graduate Committee in Mathematical Science must be satisfied that the student is proficient in the materials covered in standard undergraduate courses in calculus (MATH 321, 322, 323, 324), differential equations (MATH 431), linear algebra (MATH 318, 319), mathematical statistics (STAT 341, 342), and computer science (COMP 205, 206).

University Graduate Policies and Procedures

See page 58 and the current FTU Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites
2. Core Courses: The following courses are required.

MATH 521	Advanced Calculus I	3 hours
MATH 525	Techniques of Complex Variables	4 hours
MATH 621	Advanced Calculus II	3 hours
MATH 625, 626	Methods of Mathematical Analysis I, II	6 hours
STAT 501	Statistical Analysis	3 hours
STAT 547	Applied Probability	3 hours
STAT 601	Multivariate Statistical Methods	3 hours
STAT 647	Probability and Statistics	3 hours
3. Restricted Electives 8-14 hours
 - Group A (2 courses)

COMP 503	Hardware Concepts	4 hours
COMP 511	Software Concepts	4 hours
COMP 561	Numerical Analysis I	4 hours
COMP 565	Scientific Applications Concepts	4 hours
COMP 607	Philosophy of Programming	3 hours
 - Group B
MATH, STAT or COMP courses numbered 500 or above. Graduate courses outside the department may be used if approved by the student's committee. 0-7 hours
4. Thesis or Research Report 9-3 hours
5. Examinations
 - a. A written and/or an oral comprehensive examination over the core courses will be administered by the student's advisory committee. The form and nature of the examination(s) are at the discretion of the advisory committee.
 - b. An oral defense of the thesis will be required of those students who elect to write a thesis.
6. Other requirements: None specified.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	63

(see pages 61-62)

COLLEGE OF SOCIAL SCIENCES

UNDERGRADUATE PROGRAMS

AEROSPACE STUDIES

ALLIED LEGAL SERVICES

COMMUNICATION

COMMUNICATIVE DISORDERS

FILM

JOURNALISM

RADIO-TELEVISION

SPEECH

CRIMINAL JUSTICE

ECONOMICS

POLITICAL SCIENCE

PSYCHOLOGY

PUBLIC ADMINISTRATION

SOCIAL SCIENCES

SOCIOLOGY

ANTHROPOLOGY

SOCIAL WORK

GRADUATE PROGRAMS

COMMUNICATION

PUBLIC POLICY

CLINICAL PSYCHOLOGY

INDUSTRIAL PSYCHOLOGY

SCHOOL PSYCHOLOGY

COLLEGE OF SOCIAL SCIENCES

Dean: *B. Kissel, AD 243, Phone 275-2291*
Associate Dean: *J. Rollins, AD 243, Phone, 275-2293*
Assistant to the Dean: *L. Tanzi, AD 243, Phone, 275-2292*

In keeping with the aims of Florida Technological University, the College of Social Sciences provides curricula designed: (1) to develop competence in specialized professional disciplines through academic and practical preparation; (2) to provide increased awareness of the development, purposes, and functioning of the social sciences in the world that surrounds us. The College awards the baccalaureate degree with majors in the following areas: Allied Legal Services, Communication (Communicative Disorders, Film, Journalism, Radio-Television, and Speech), Criminal Justice, Economics, Political Science, Psychology, Public Administration, Sociology (Anthropology, Social Work), and Social Sciences. The College also awards the Masters Degree in Communication, Psychology, and Public Policy.

In addition to providing specialized training, the College of Social Sciences functions in a service capacity by making available a selection of courses designed to complement the offerings of the other five colleges of the University.

A student enrolled in the College as an undergraduate must fulfill all University degree requirements including the Environmental Studies Program, as well as the particular requirements set forth by the department for each area of specialization. To be certified for graduation, a student must achieve at least a "C" grade point average (2.0) in the courses of his major.

A student whose written or oral communication in any course is deemed unsatisfactory may be referred to the Dean by the instructor. Additional course work or an individual study program may be assigned consistent with the needs of the student and must be completed before the degree is granted.

AEROSPACE STUDIES

Chairman: *B. Whisenant, AD 243, Phone, 275-2264*
Faculty: *Barucky, Nicosia, Williams*

The Department of Aerospace Studies provides pre-commissioning education for qualified students who desire to serve as commissioned officers in the active duty Air Force. The department offers both a two-year and a four-year commissioning program, each with its own special advantages. The two-year commissioning program allows junior college transfer students and other students with two academic years remaining in either undergraduate or graduate status to obtain an Air Force commission while completing their studies. The four-year program provides on-campus study during the freshman through senior years. Both programs offer scholarships for selected students. Such scholarships include full tuition, fees, required text books, and \$100 per month. The Aerospace Studies curriculum is divided into two phases: (1) the General Military Course and (2) the Professional Officer Course. Students are invited to write or visit the Department of Aerospace Studies to obtain additional information.

1. General Military Course

The General Military Course consists of the freshman and sophomore courses for students in the four-year AFROTC program. These courses deal with the Air Force in the contemporary world through a study of the total structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. The courses include the study of the development of air power from balloons and dirigibles through the peaceful employment of US air power in relief missions and civic action programs in the late 1960's and also the air war in Vietnam.

2. Professional Officer Course

The Professional Officer Course consists of Aerospace Studies courses offered during the junior and senior years. It must be completed by all students who seek a commission through the Air Force ROTC. Course continuity is designed to prepare selected college students to serve as active duty Air Force officers upon graduation and commissioning. The curriculum is devoted to a critical analysis of the role of the Armed Forces as an integral element of contemporary American society (AS 300) and to the theory and application of general concepts of leadership and management in Air Force situations (AS 400). Special emphasis is placed on the development of communicative skills.

REQUISITES FOR ADMISSION TO THE PROFESSIONAL OFFICER COURSE

1. Be at least 17 years of age at the time of acceptance.
2. Be able to complete the Professional Officer Course and graduate from University prior to reaching age 26 years and 6 months if entering Flight Training or before age 30 if entering non-flying category.
3. Pass the Air Force Officer Qualifying Test and physical examination.
4. For those students enrolled in the four-year AFROTC program, complete the General Military Course or its equivalent, or have acceptable prior military service. Veterans and students with previous ROTC training are invited to write or visit the Department of Aerospace Studies to discuss their status.
5. For those students desiring entry into two-year AFROTC program, complete the application and testing process preferably prior to April 1 of the year preceding the one in which they wish to enroll in the Professional Officers Course; complete a six-week Field Training encampment prior to enrollment in the Professional Officers Course.
6. Selection by the Professor of Aerospace Studies and acceptance by the University.
7. Execute a written agreement with the government to complete the Professional Officer Course and accept an Air Force commission.
8. Enlist in the Air Force Reserve for a period of six years (terminated upon entering Air Force as a commissioned officer).

AIR FORCE ROTC COLLEGE SCHOLARSHIP PROGRAM

The ROTC Vitalization Act of 1964 established military scholarships for selected cadets in the four-year AFROTC program. In 1972, scholarships were extended to selected students entering the two-year AFROTC program. Such scholarships provide for full tuition, fees and required text books. In addition, recipients of these scholarships

receive \$100 per month. Recipients of scholarships are nominated by a committee composed of AFROTC officers and university faculty. Final selection is made at AFROTC Headquarters, Maxwell AFB, Alabama. Usually if required standards are maintained, the scholarships continue through the selectee's senior year.

MONETARY ALLOWANCE

Cadets enrolled in the Professional Officer Course receive a monetary allowance of \$100 per month.

SUMMER TRAINING: TWO-YEAR PROGRAM

Students must complete the six-week Field Training course before they can formally enroll in the Professional Officer Course. This course is conducted at an Air Force base. It includes military training, physical conditioning, and a modified version of the General Military Course. Students who complete the six-week Field Training receive approximately \$445.

SUMMER TRAINING: FOUR-YEAR PROGRAM

Cadets enrolled in the four-year AFROTC program are required to attend a four week Field Training course at an Air Force base. Normally, cadets must attend this program at the end of the General Military course. Summer Field Training provides a better understanding of the United States Air Force mission, increases the cadet's proficiency in junior officer training area, and stresses the importance of physical conditioning. Cadets who complete the four-week Field Training course receive approximately \$330.

FLIGHT INSTRUCTION PROGRAM

Cadets in the Professional Officer Course who are qualified for and seek pilot training in the United States Air Force receive twenty-five clock hours of civilian flight instruction and approximately 40 hours of ground school. This instruction may qualify the cadet for a private pilot's license.

OFFICER COMMISSIONS

Cadets who complete the Professional Officer Course are appointed Second Lieutenants in the United States Air Force Reserve. As reserve officers, they incur an obligated active duty tour of four years (non-flying) or six years (flying). During this period of active service, they are encouraged to and may remain on active duty indefinitely. They are given the opportunity during this period to obtain a regular commission in the United States Air Force.

MAJOR

A student taking the Air Force ROTC program may major in any discipline he desires. A major is not offered by this department. Courses offered by AFROTC may be found in "Course Descriptions" under the prefix AFR.

DEPARTMENT OF COMMUNICATION

Chairman: *R. Buchanan*, FA 234B, Phone, 275-2681

Faculty: *Arnold, Bennett, Butler, Calonus, Fedler, Hoglin, Ingram, Jackson, Johnson, Meeske, Morgan, Mullin, O'Keefe, Pryor, Tanzi, Taylor, Wycoff*

The Department of Communication offers programs both in general communication and in specialization areas within the discipline of communication. Specialization programs are available in Communicative Disorders, Film, Journalism, Radio-Television, and Speech. Successful completion of programs leads to a Bachelor of Arts degree with a major in Communication.

Any student contemplating graduate studies should be aware of special requirements in some graduate schools, such as foreign languages, statistics, and computer programming.

An internship program is available to qualified students. This program earns elective credit only and cannot be applied to the major requirement of 54 hours.

Students may select one of the following specializations to complete the requirements for a major in communication:

BACHELOR OF ARTS: COMMUNICATION

Degree Requirements

1. University Requirements
(See page 46)
 2. Environmental Studies Program
(See pages 63-64)
 3. Required Courses
 - a. Fifty-four (54) quarter hours of Communication Department course offerings.
 - b. COM 301 Communication as a Behavioral Science 4 hours
 - c. Additional required courses vary with specialization
 4. Restricted Electives
 Vary with specialization
 5. Electives
- Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. General Communication
A General Communication specialization requires a minimum of 35-36 quarter hours of course work offered. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas in the Communication Department. The following are required courses:

Communication Theory

COM 363	Group Interaction and Decision Making	4 hours
COM 410	Social Responsibilities of the Mass Media	4 hours
COM 411	Legal Responsibilities of the Mass Media	4 hours
COM 462	Attitudes and Communication	4 hours

In addition, required hours must be selected from each of the following areas:

History (4 Hours)

RTV 355	Foundation of Broadcasting	4 hours
JRN 330	History of American Journalism	4 hours
COM 468	Evolution of Communication Theory	4 hours

Motivation (7-8 Hours)

JRN 433	Propaganda and Psychological Warfare	4 hours
JRN 440	Public Relations	4 hours
JRN 464	Principles of Advertising	4 hours
RTV 452	Broadcast Criticism	4 hours
SPE 361	Persuasion-Motivation	4 hours
SPE 371	Speech and Human Relations	4 hours

Research (8 Hours)

COM 400	Opinion and the Mass Media	4 hours
COM 313	Interpersonal Communication	4 hours
COM 460	Group Dynamics	4 hours
COM 463	Studies in Listening	4 hours

For course descriptions refer to specific areas: Communication, Journalism, Radio-Television, Speech.

2. Communicative Disorders

A Communicative Disorders specialization requires the following required course list. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas other than Communicative Disorders in the Communication Department. Required courses are:

COM 320	Introduction to Communicative Disorders	4 hours
COM 321	Biolinguistics	4 hours
COM 377	Differential Diagnosis in Communicative Disorders	4 hours
COM 401	Communicative Disorders: Articulation	4 hours
COM 402	Communicative Disorders: Language	4 hours
COM 403	Voice Disorders	4 hours
COM 404	Communicative Disorders Stuttering	4 hours
COM 405	Clinical Methods in Communicative Disorders	4 hours
COM 445	Basic Audiology	4 hours
COM 450	Aural Habilitation	4 hours
SPE 261	English Phonetics and American Dialects	5 hours
SPE 364	Physical Bases of Speech and Hearing	5 hours

3. Film

A Film Specialization requires 36 quarter hours in Radio-Television-Film, including those listed on the required course list. Additionally, a minimum of 11 quarter hours must be selected within each of any two emphasis areas other than Film offered by the Communication Department. Required courses are:

RTV 355	Foundations of Broadcasting	4 hours
RTV 337	Broadcast Techniques	4 hours
COM/THA 310	History of Motion Picture	4 hours
JRN 323	Press Photography I	4 hours
RTV 345	Film for Television	4 hours
RTV 445	Television Film Production	4 hours
RTV 447	Television Film Documentary	4 hours
COM 411	Legal Responsibilities of the Mass Media	4 hours

Recommended Courses: JRN 319, RTV 340, RTV 341, THA 424, ART 204, ART 342

4. Journalism

Students selecting a Journalism specialization may select one of three sequences for emphasis: News-Editorial, Advertising, or Public Relations. In addition to the 36 quarter hours in Journalism, including the following required course list, students must receive credit for two other JRN prefix courses of their choice, and for a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Journalism offered by the Communication Department. Required courses are:

JRN 319	Basic Reporting	4 hours
JRN 321	Copy Editing	4 hours
JRN 322*	Advanced Editing	4 hours
JRN 422*	Public Affairs Reporting	4 hours
JRN 330	History of American Journalism	4 hours
JRN 431	International Communication and the Foreign Press	4 hours
JRN 464	Principles of Advertising	4 hours
COM 411	Legal Responsibilities of the Mass Media	4 hours

*Students in advertising sequence may substitute JRN 465 (Advertising Media) and JRN 466 (Advertising Copy) for JRN 322 and JRN 422.

5. Radio-Television

A Radio-Television specialization requires a minimum of 36 quarter hours in Radio-Television, completion of the following required course list, plus a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Radio-Television. Other recommended courses are: COM 310, SOC 325, and PSY 308. The required courses are:

RTV 355	Foundations of Broadcasting	4 hours
RTV 446	Radio-Television and Society	4 hours
COM 411	Legal Responsibilities of the Mass Media	4 hours
RTV 448	Broadcast Regulations	4 hours
RTV 452	Broadcast Criticism	4 hours

In addition the student must select one of the following courses:

RTV 340	Audio Production	4 hours
RTV 341	Television Production	4 hours
RTV 345	Film for Television	4 hours

6. Speech Communication

A Speech Communication specialization requires a minimum of 36 quarter hours in Speech including those appearing on the required course list. Additionally, a minimum of 11 quarter hours to be selected within each of any two emphasis areas other than Speech offered by the Communication Department. Required courses are:

SPE 261	English Phonetics and American Dialect	5 hours
SPE 360	Argumentation and Debate	4 hours
COM 363	Group Interaction and Decision-Making	4 hours
SPE 366	Speech Composition	4 hours
SPE 371	Speech and Human Relations	4 hours
SPE 362	Platform Speaking	4 hours

In addition, required hours must be selected from each of the following areas:

Interpersonal and Organizational Communication (3-4 Hours)

COM 313	Interpersonal Communication	3 hours
COM 312	Leadership Through Oral Communication	4 hours
SPE 361	Persuasion: Motivation	4 hours

Experimental (4 Hours)

COM 460	Group Dynamics	4 hours
COM 462	Attitudes and Communication	4 hours
COM 463	Studies in Listening	4 hours

History and Criticism (4-5 hours)

COM 568	Evolution of Communication Theory	5 hours
COM 472	Rhetoric of Social and Political Action	4 hours

Students interested in secondary school teaching should refer to the Speech Education Program contained within the College of Education for program information.

MAJOR IN ECONOMICS

Contact Person: J. Rollins, AD243, Phone: 275-2293

The Bachelor of Arts Program is designed to permit greater flexibility in course selection to the Economics major not planning a career in business. Although all economics courses are offered and administered by the College of Business Administration, they are available to students majoring in economics in the College of Social Sciences. Successful completion of this program leads to the Bachelor of Arts degree with a major in Economics.

BACHELOR OF ARTS: ECONOMICS

Degree Requirements

1. University graduation requirements
(see page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses:

ECON 202	Principles of Microeconomics	4 hours
ECON 203	Principles of Macroeconomics	4 hours
ECON 301	Intermediate Price Theory	4 hours
ECON 311	Intermediate Money, Income, and Employment Theory	4 hours
ECON 321	Quantitative Methods and Business Decision Analysis	4 hours
ECON 431	Public Finance in the American Economy	4 hours
ENG 301	Professional Report Writing I	3 hours
FIN 331	Money and Banking	4 hours
4. Restricted Electives
 - a) ACCY 300 Financial Accounting 5 hours
or
ACCY 211 Financial Accounting I 3 hours
and
ACCY 212 Financial Accounting II 3 hours
 - b) Five courses in ECON
 - c) 36 quarter hours beyond Environmental Studies requirements from Behavioral Sciences, Mathematics, and the Social Sciences.
5. Electives

Total Quarter Hours Required 180

DEPARTMENT OF POLITICAL SCIENCE

Chairman: H. Kennedy, SC232A, Phone 275-2608

Faculty: Bledsoe, Handberg, Jervey, M. Jones, Lilie, Smyth, Stern, Whisler

The discipline of political science deals with the elements of man's political behavior; politics, the study of the diverse institutions, procedures and practices relating to political decision-making; and government, the study of the processes by which political decisions are made operational. Political Science is thus interdisciplinary in its interest and yet segmentally focused into major areas of concern.

Specializations are available in American Institutions and Public Policy, International Politics, Comparative Politics, Political Theory and Methodology. Successful completion of any concentration leads to the Bachelor of Arts degree with a major in Political Science.

Although there are no formal language requirements for a political science major, it is strongly recommended that majors planning to continue their education at the graduate level or to pursue a career in international fields acquire a working knowledge of a foreign language.

BACHELOR OF ARTS: POLITICAL SCIENCE

Degree Requirements

1. University Regulations
(see page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses

PCL 201	American National Government	4 hours
PCL 302	Scope and Methods of Political Science	4 hours
	or	
PCL 303	Principles of Political Science	4 hours
4. Restricted Electives
40 quarter hours in PCL including a minimum of five courses at the 400 level. Some remaining elective hours should be taken in such related fields as anthropology, computer science, economics, geography, history, management, mathematics, philosophy, psychology, sociology, or statistics according to the interests of the student and with the concurrence of his advisor.
5. Electives

Total Quarter Hours Required

180

AREAS OF SPECIALIZATION

The following courses offer a guide to the areas of concentration available in the department.

1. American Institutions and Public Policy

PCL 300	State Government
PCL 302	Scope and Methods
PCL 303	Principles of Political Science
PCL 305	Political Parties and Processes
PCL 306	Interest Groups and Political Movements
PCL 308	The American Presidency
PCL 310	Congress and the Legislative Process
PCL 312	Minorities in American Politics
PCL 315	Public Opinion
PCL 316	Electoral Behavior
PCL 413	Metropolitan Politics
PCL 417	Policy Problems of Metropolitan Areas
PCL 418	The Politics of Planning for Urban Communities
PCL 424	Political Sociology
PCL 425	Political Party Behavior
PCL 447	Political Socialization
PCL 450	American Public Policy
PCL 471	American Constitutional Law
PCL 473	American Constitutional Law
PCL 475	Judicial Behavior
PCL 490	Series
2. International Politics

PCL 321	International Relations
PCL 322	World Political Geography
PCL 323	Contemporary International Politics
PCL 420	Contemporary International Politics of Asia
PCL 421	International Politics of the Middle East

PCL 422	Inter-American Politics and Organizations
PCL 427	American Foreign Policy
PCL 428	American Defense Policy
PCL 430	International Organizations
PCL 432	International Law I
PCL 433	International Law II
PCL 435	Coercion in International Politics
PCL 490	Series

3. Comparative Politics

PCL 341	Comparative Politics
PCL 342	Nationalism
PCL 343	Politics of Developing Areas
PCL 344	Comparative Asian Politics
PCL 347	Contemporary Revolution and Political Violence
PCL 348	Politics of Mexico, Central America and the Caribbean
PCL 442	Government and Politics of Great Britain
PCL 443	Government and Politics of the Soviet Union
PCL 444	Non-Western Politics
PCL 490	Series

4. Political Theory and Methodology

PCL 316	Electoral Behavior
PCL 405	Political Theory
PCL 406	Contemporary Democratic Theory
PCL 461	Political Philosophy I
PCL 462	Political Philosophy II
PCL 463	Political Philosophy III
PCL 490	Series

PRE-LAW: POLITICAL SCIENCE

While no specific major is prescribed for admission to law school, many pre-law students elect to major in political science. These individuals must conform to all requirements for the Bachelor of Arts in Political Science degree as well as complete the following required core courses for the Political Science — Pre-Law emphasis:

PCL 201	American National Government	4 hours
PCL 302	Scope and Methods of Political Science	4 hours
	or	
PCL 303	Principles of Political Science	4 hours
PCL 471, 473, 432, 433	Any one	4 hours
PCL 475	Judicial Behavior	4 hours
TOTAL		16 hours

Students are encouraged to work closely with the pre-law advisor in planning their programs. By judicious use of electives, the student not only builds a firm foundation for law school entry, but in addition, acquires a broad vocational training which can result in career options upon graduation.

RUSSIAN AREA STUDIES: POLITICAL SCIENCE

The Department of Political Science in conjunction with the Departments of History, Sociology, Economics, and Foreign Languages offer an interdisciplinary program in Russian Area Studies. A certificate of participation is awarded upon successful completion of prescribed courses. Any student with any major may earn the certificate. For further information, contact Dr. Henry Kennedy, SC232, phone 275-2608.

DEPARTMENT OF PUBLIC SERVICE ADMINISTRATION

Chairman: *W. Young*, LR 114H, Phone 275-2603

Faculty: *Caolo, Duffey, Holten, Korstad, McLaren*

The Department of Public Service Administration incorporates three related major programs: Allied Legal Services, Criminal Justice, and Public Administration. These programs share a common concern with the institutions and processes by which political and social decisions are made operational, and a common goal of preparing students to assume duties and responsibilities as professionals dedicated to service of the public.

ALLIED LEGAL SERVICES

Students in this program offered by the Department of Public Service Administration are trained as para-legal professionals to serve as supplemental staff in law offices and public agencies. It is intended to produce a mature, highly motivated aide capable of moving into the fact gathering, research and compilation phases of legal practice. The graduate would be expected to work under the general direction of an attorney and to be familiar with basic legal procedures and terminology and skilled in the rapid and accurate acquisition, recording, and the reporting of essential data. He also would be expected to undertake interviewing and investigative functions. In addition, it is expected that the instruction received will impart respect for the law and an understanding of its role in our government and society and will produce a graduate of high ethical standards.

The program at present stresses the area of private legal relations, the aspect of the law considered by attorneys to offer the greatest promise for useful para-professional contribution to legal practice. However, an increasing number of para-legals are practicing in public agencies. This course of study also is suited to the needs of these para-legal practitioners.

The content of the LES courses and concentrates on the mutual legal rights and obligations of the parties involved in the respective matters. Other aspects of those relations — e.g., the economic, social or environmental — are covered in the supporting courses offered by other departments and colleges of the University. Successful completion of the program leads to the degree of Bachelor of Arts with a major in Allied Legal Services.

BACHELOR OF ARTS: ALLIED LEGAL SERVICES

1. University requirements
(see page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses:

LES 302	Legal Investigation	4 hours
LES 304	Law and the Paraprofessional	4 hours
LES 305	Litigation and Trial Practice	4 hours
LES 374	Property Law	4 hours
LES 442	Domestic Relations	4 hours
BADM 371	Legal Environment of Business	3 hours
BADM 372	Business Law	3 hours

4. Restricted Electives
 - a) 10 quarter hours of LES coursework
 - b) 12 quarter hours in allied fields which may include accounting, business, economics, public administration, etc. with advisors consent.
 5. Electives
- Total Quarter Hours Required 180

CRIMINAL JUSTICE

A professional career in the field of Criminal Justice offers a special challenge in a contemporary society that is dynamic, heterogeneous and mobile, and places a high value upon individual freedom. Today, more than ever before, the various criminal justice sub-fields offer a special challenge that is both demanding and rewarding.

A criminal justice career enables young men and women to serve their country and their community in an extraordinarily interesting, active and complex field. The program of study is designed to assist the student to attain specific professional career objectives as well as to provide him with a general background in the social and administrative sciences.

The program offers three specific areas of specialization: law enforcement, corrections, and justice administration. Study options for either service or administrative careers are available in law enforcement or corrections and the justice administration concentration offers study options for either court service work or justice system policy and planning. The satisfactory completion of the curriculum leads to the degree of Bachelor of Arts with a major in Criminal Justice.

BACHELOR OF ARTS: CRIMINAL JUSTICE

1. University Graduation Requirements
(see page 46)
 2. Environmental Studies Program
(see pages 63-64)
 3. Required Courses:

CRJ 201	Introduction	4 hours
CRJ 302	Administration of Justice	4 hours
CRJ 310	The Correctional and Penal System	4 hours
PAD 350	Public Administration	4 hours
 4. Restricted Electives
 - a) 33 quarter hours of CRJ courses
 - b) 26 quarter hours of Allied Supporting courses to be selected with and approved by the student's advisor.
 5. Electives
- Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Corrections Concentration

CRJ 300	Crime in America
CRJ 301	Criminal Law in Action
CRJ 304	The Police Manager
CRJ 311	Parole and Probation
CRJ 407	Comparative Justice Systems
CRJ 410	Financial Administration and Budgeting
CRJ 411	Justice Policy and Social Conflict
CRJ 422	Delinquency Control
CRJ 423	Corrections Administration
CRJ 491	Special Topics in Criminal Justice

Recommended Allied Field

SOC 325	Urban Sociology
SOC 340	Social Welfare
SOC 344	Sociology of Deviant Behavior
SOC 345	Juvenile Delinquency
SOC 346	Criminology
SOC 347	Sociology of Mental Illness
	or
PSY 310	Abnormal Psychology
PSY 301	Basic Learning Processes
PSY 321	Principles of Behavior Modification
COM 313	Interpersonal Communication
COM 363	Group Interaction and Decision-making
PCL 300	State Government
PAD 414	Metropolitan Administration
ENG 301	Professional Report Writing
LES 301	Law and Society
AHS 350	Health Law

2. Justice Administration Concentration

CRJ 300	Crime in America
CRJ 303	Municipal Police Administration
CRJ 304	The Police Manager
CRJ 311	Parole and Probation (Court Service-option)
CRJ 400	Police and the Community
CRJ 407	Comparative Justice Systems
CRJ 410	Financial Administration and Budgeting
CRJ 411	Justice Policy and Social Conflict
CRJ 491	Special Topics in Criminal Justice
CRJ 492	Seminar: Court Administration

Recommended Allied Field

PCL 300	State Government
PCL 413	Metropolitan Politics
PAD 414	Metropolitan Administration
PAD 416	Public Administration Internship
PAD 440	Comparative Public Administration I
PAD 441	Comparative Public Administration II
PCL 417	Policy Problems of Metropolitan Areas
	or
PCL 418	The Politics of Planning for Urban Communities
PCL 475	Judicial Behavior
SOC 335	Social Institutions
COM 400	Opinion and the Mass Media
COM 411	Legal Responsibilities of the Mass Media
PAD 491	Special Topics in Public Administration
LES 301	Law and Society
LES 302	Legal Research and Investigation
LES 304	Law and the Paraprofessional
LES 315	Administrative Law
ENG 301	Professional Report Writing

3. Law Enforcement Concentration

CRJ 300	Crime in America
CRJ 303	Municipal Police Administration
CRJ 304	The Police Manager
CRJ 400	The Police and the Community
CRJ 410	Financial Administration and Budgeting
CRJ 411	Justice Policy and Social Conflict
CRJ 422	Delinquency Control
CRJ 301	Criminal Law in Action
CRJ 407	Comparative Justice System
CRJ 491	Special Topics in Criminal Justice

Recommended Allied Field

SOC 345	Juvenile Delinquency
SOC 346	Criminology
SOC 352	Race and Ethnic Minorities in the United States
SOC 344	Sociology of Deviant Behavior
	or
PSY 310	Abnormal Psychology
PSY 308	Social Psychology
COM 311	Business and Professional Communication
COM 313	Interpersonal Communication
PAD 414	Metropolitan Administration
PCL 300	State Government
PAD 440	Comparative Public Administration I
PAD 441	Comparative Public Administration II
PCL 411	Public Policy Administration
PAD 491	Special Topics in Public Administration
ENG 301	Professional Report Writing
LES 302	Legal Investigation
LES 315	Administrative Law

PUBLIC ADMINISTRATION

Students considering careers in public service at the federal, state or local level may choose to enroll in the Public Administration program offered by the Department of Public Service Administration. The Public Administration program has been strengthened by the addition of relevant courses from these related programs — Criminal Justice and Allied Legal Services. Its internship option offers qualified students a significant opportunity to acquire practical experience in government while completing their undergraduate curriculum.

The major in Public Administration requires the completion of 48 quarter hours of approved courses — 36 in the core courses, and at least 12 quarter hours of electives in Public Service. Successful completion of the program leads to the Bachelor of Arts degree with a major in Public Administration.

BACHELOR OF ARTS: PUBLIC ADMINISTRATION

1. University Graduation Requirements
(see page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses:

PAD 350	Introduction to Public Administration	4 hours
PAD 411	Public Policy Administration	4 hours
PAD 414	Metropolitan Administration	4 hours
CRJ 304	The Police Managers	4 hours
CRJ 410	Financial Administration and Budgeting	4 hours
CRJ 491	Special Topics	4 hours
PAD/CRJ 494	Independent Study	4 hours
STAT 201	Principles of Statistics	4 hours
LES 315	Administrative Law	4 hours
4. Restricted Electives
12 quarter hours selected from the Public Service Administration Department offerings.
5. Electives

Total Quarter Hours Required

180

DEPARTMENT OF PSYCHOLOGY

Chairman: *D. Abbott, AD 124, Phone 275-2216*

Faculty: *Blau, Brophy, Burr, Burroughs, Fisher, Frank, Jaffee, McGuire, O'Hara, Rollins, Shirkey, Smith, Tell, Thomas, Tucker, Van Twyver*

The undergraduate program provides a general preparation in Psychology with the option to select specialization electives according to student interests. Successful completion of the program leads to the Bachelor of Arts degree with a major in Psychology.

BACHELOR OF ARTS: PSYCHOLOGY

Degree Requirements

1. University graduation requirements
(see page 46)
2. Environmental Studies Program
(see pages 63-64)
3. Required Courses

PSY 201, 202	General Psychology	8 hours
PSY 301	Basic Learning Processes	5 hours
PSY 303	Physiological Psychology	4 hours
PSY 316	Careers in Psychology	2 hours
PSY 495	Research Methods	4 hours
4. Restricted Electives
 - a) Any two

PSY 308	Social Psychology	4 hours
PSY 309	Personality Theory	4 hours
PSY 310	Abnormal Psychology	4 hours
PSY 313	Developmental Psychology	4 hours
 - b) Any one

PSY 305	Psychological Measurement	4 hours
PSY 411	Statistical Methods in Psychology	4 hours
 - c) A total of 20 quarter hours in other PSY courses taken in accordance with the student's interests and career goals and with the consent of advisor.
5. Electives

Total Quarter Hours Required	180
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AREAS OF SPECIALIZATION

The following groupings of courses are important to include within the 55 psychology hours for the interest area or career goal indicated.

1. Industrial Psychology

PSY 305	Psychological Measurement
PSY 308	Social Psychology
PSY 309	Personality Theory
PSY 314	Industrial Psychology
PSY 321	Principles of Behavior Modification
PSY 340	Environmental Psychology
PSY 353	Psychology of Racial Prejudice
PSY 371	Interviewing and Counseling
PSY 411	Statistical Methods in Psychology
- II. Exceptional Populations

PSY 305	Psychological Measurement
PSY 306	Psychology of Adjustment
PSY 309	Personality Theory
PSY 310	Abnormal Psychology
PSY 313	Developmental Psychology

PSY 321	Principles of Behavior Modification
PSY 371	Psychology of Exceptional Children
PSY 353	Psychology of Racial Prejudice
PSY 415	Individual Intelligence Testing
PSY 372	Mental Retardation
PSY 390	Undergraduate Field Work
PSY 370	Interviewing and Counseling

III. Educational/Counseling

PSY 305	Psychological Measurement
PSY 309	Personality Theory
PSY 313	Developmental Psychology
PSY 321	Principles of Behavior Modification (Strongly recommended to be taken early in concentration)
PSY 343	Educational Psychology
PSY 371	Psychology of Exceptional Children
PSY 370	Interviewing and Counseling
PSY 390	Undergraduate Field Work (Recommended to be taken during senior year)

Other courses pertinent to the area:

PSY 330	Psychology of Women
PSY 306	Psychology of Adjustment
PSY 353	Psychology of Racial Prejudice
PSY 415	Individual Intelligence Testing
PSY 315	Drugs and Behavior

Students interested in public school guidance counseling will need to obtain Professional Preparation in Education in addition to graduate training in guidance/counseling.

IV. Community Services

PSY 309	Personality Theory
PSY 310	Abnormal Psychology
PSY 305	Psychological Measurement
PSY 312	Clinical Psychology
PSY 321	Principles of Behavior Modification
PSY 415	Individual Intelligence Testing
PSY 315	Drugs & Behavior
PSY 370	Interviewing & Counseling
PSY 390	Undergraduate Field Work
PSY 313	Developmental Psychology

Other courses pertinent to the area:

PSY 306	Psychology of Adjustment
PSY 330	Psychology of Women
PSY 373	Psychology of Aging
PSY 353	Racial Prejudice
PSY 343	Educational Psychology
PSY 371	Exceptional Child
PSY 372	Mental Retardation

DEPARTMENT OF SOCIOLOGY

Chairman: C. Unkovic, LR 117, Phone 275-2227

Faculty: Allen, Brown, Dees, Hodgins, Jones, Legg, Miller, Tropf, Wallace, Washington, Wright

The Department of Sociology offers the student an opportunity to obtain a Bachelor of Arts in Sociology with a specialization in general sociology, social work, or anthropology. Successful completion of a program leads to the Bachelor of Arts degree with a major in Sociology.

Although a foreign language is not required for a sociology major, students planning to continue their education at the graduate level are strongly urged to acquire a working knowledge of a foreign language.

BACHELOR OF ARTS: SOCIOLOGY

Degree Requirements

1. University Requirements
(see page 46)
 2. Environmental Studies Program
(see page 63)
 3. Required Courses

SOC 201	General Sociology	4 hours
SOC 304	The Development of Social Thought or	
SOC 306	Modern Sociological Thought	4 hours
SOC 495	Research Methods	4 hours
STAT 201	Principles of Statistics	4 hours
 4. Restricted Electives
Varies with Specialization
 5. Electives
Varies with Specialization
- Total Quarter Hours Required 180

AREAS OF SPECIALIZATION

1. Anthropology

A specialization in Anthropology requires a minimum of 56 quarter hours of SOC courses including the following additional required courses:

SOC 310	Introductory Anthropology (Physical)	4 hours
SOC 311	Introductory Anthropology (Cultural)	4 hours
SOC 315	Physical Anthropology	4 hours
SOC 316	Comparative Social Organization	4 hours
SOC 402	Method and Research in Anthropology	4 hours
SOC 497	Research	4 hours

The remaining 16 quarter hours are to be taken from the areas listed below (Minimum of one course in each area.)
 "Area Courses" (minimum of 1 each area):

ENG 371	Principles of Linguistics	3 hours
SOC 403	Anthropological Linguistics	4 hours

Archaeology

SOC 312	Old World Prehistory	4 hours
SOC 313	New World Prehistory	4 hours
SOC 314	Field and Lab. Tech. Arch.	4 hours

Ethnology

SOC 308	Ethnology N. American Indians	4 hours
SOC 309	Plains Indians of N. America	4 hours
SOC 317	Comp. Cult: Africa	4 hours

Specialized Studies

SOC 307	Sociology of Religion	4 hours
SOC 353	Cult. & Personality	4 hours
SOC 402	Method & Theory in Anthropology	4 hours
2. General Sociology

A specialization in General Sociology requires a minimum of 56 quarter hours in SOC courses including the following additional required courses:

SOC 202	General Sociology	4 hours
SOC 310	Introductory Anthropology (Physical) or	

SOC 311	Introductory Anthropology (Cultural)	4 hours
SOC 497	Research	4 hours

The remaining 28 quarter hours required in sociology may be selected according to the interests of the student and with the agreement of the advisor.

The following sequences are offered only as a guide for aiding students to pursue specialized interests and goals:

Family

SOC 349	Human Growth and Development
SOC 354	Sociology of Adolescence
SOC 406	Sociology of Aging
SOC 407	The Family

Research

SOC 494	Independent Study
SOC 495	Undergraduate Research Methods
SOC 497	Research
STAT 201	Principles of Statistics

Social Change

SOC 360	Social Change
SOC 362	Contemporary Women in Society
SOC 408	Social Change in Developing Areas
SOC 451	Contemporary Social Movements

Social Deviance

SOC 331	Social Problems
SOC 344	Sociology of Deviant Behavior
SOC 345	Juvenile Delinquency
SOC 346	Criminology
SOC 347	Sociology of Mental Illness
SOC 348	Sociology of Alcoholism
SOC 452	Sociology of Drug Abuse

Social Organization

SOC 316	Comparative Social Organization
SOC 320	Collective Behavior
SOC 336	Social Stratification

Social Psychology

SOC 353	Culture and Personality
SOC 401	Individuals in Society
PSY 308	Social Psychology

Theory

SOC 304	Development of Social Thought
SOC 306	Modern Social Thought

3. Social Work

A specialization in Social Work requires a minimum of 63 quarter hours in SOC courses including the following required courses:

SOC 311	Introductory Anthropology (Cultural)	4 hours
SOC 340	Social Welfare: A Social Institution	4 hours
SOC 341	Social Work: Principles and Methods	4 hours
SOC 342	Government and Social Welfare	4 hours
SOC 343	The Community and Social Welfare	4 hours
SOC 349	Human Growth and Development	4 hours
SOC 350	Interviewing in Social Work Practice	4 hours
SOC 412	Field Experience and Seminar	15 hours
SOC 494	Independent Study	4 hours

MAJOR IN SOCIAL SCIENCES

Contact Person: J. Rollins, AD243, Phone 275-2293

This unique program offers students an opportunity to become acquainted with the various fields of Social Sciences and to understand better the relationships between those fields. Satisfactory completion

of the program leads to the degree Bachelor of Science with a major in Social Sciences.

BACHELOR OF SCIENCE: SOCIAL SCIENCES

Degree Requirement

1. University requirements
(see page 46)
 2. Environmental Studies Program
(see pages 63-64)
 3. Required courses
none
 4. Restricted Electives
 - a) Choose one
 - PCL 302 Scope and Methods of Political Science
 - PSY 495 Research Methods
 - SOC 495 Research Methods
 - b) A minimum of 22 quarter hours in each of four Social Science disciplines. The following are the required courses for each discipline selected:
 - COMMUNICATION**
 - COM 100 Basic Communication
 - COM 301 Communication as a Behavioral Science
 - ECONOMICS**
 - ECON 202 Principles of Microeconomics
 - ECON 203 Introduction to Aggregate Economics
 - POLITICAL SCIENCE/CRIMINAL JUSTICE**
 - PCL 201 American National Government
 - PSYCHOLOGY**
 - PSY 201 General Psychology
 - PSY 202 General Psychology
 - PSY 309 Personality Theory
 - SOCIOLOGY**
 - SOC 201 General Sociology
 - SOC 202 General Sociology
 5. Electives
- Total Quarter Hours Required 180

COLLEGE OF SOCIAL SCIENCES

GRADUATE PROGRAMS

The College of Social Sciences offers the following graduate programs of study:

- Master of Arts: Communication
- Master of Science: Clinical Psychology
- Master of Science: Industrial Psychology
- Master of Science: School Psychology
- Master of Public Policy

The College of Social Sciences requires all individuals seeking admission into a graduate program to submit a quantitative-verbal GRE score dating from no longer than 5 years previous.

MASTER OF ARTS: COMMUNICATION

Program Coordinator: *P. Taylor*, FA 544, Phone 275-2681

The Department of Communication offers a diversified program, individual and flexible, leading to the Master of Arts Degree in Communication. Instruction is offered in mass communication, communication theory and research, informational and educational systems, persuasion, communicative disorders, and other areas drawn from the divisions of Journalism, Radio-Television, and Speech.

ADMISSION REQUIREMENTS

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
 - b. three letters of recommendation from undergraduate professors

University Graduate Policies and Procedures

(See pages 58-59 as well as the current FTU Graduate Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: none
2. Core Courses: The following courses are required.

COM 602	Modern Communication Theory	4 hours
COM 695	Research Methods	4 hours
COM 696	Research Planning	4 hours
3. Restricted Electives: Twelve hours of prescribed courses from communication law, communication systems, small group communication, or specific courses approved by the student's committee.
4. Thesis: A six quarter hour credit thesis is required.
5. Examinations: Students must pass a comprehensive written and oral examination.

6. Other requirements:
 - a. A grade of "B" or better must be attained in each of the core courses.
 - b. Students may be required to demonstrate a proficiency in statistics and computer programming.

Total Quarter Hours Required	45
BOR Maximum Hours Allowed	58

(see pages 61-62)

Master's Programs in Psychology

Psychology Programs Coordinator: *J. McGuire*, ADM 129, Phone 275-2216

The Psychology Department currently offers Master's Degree Programs in Clinical Psychology, Industrial Psychology and School Psychology. All programs require the equivalent of two years of full-time attendance to complete and are designed to prepare individuals for positions as masters of level psychologists working in industrial settings, community agencies, or schools.

Emphasis in all programs is on an individual being prepared for an applied position at the completion of each program.

MASTER OF SCIENCE: CLINICAL PSYCHOLOGY

The Clinical Psychology Graduate Program at FTU was initiated for the primary purpose of providing training and preparation for individuals interested in providing professional psychological service to the community. This can be conducted in such settings as community mental health or guidance centers, out-patient psychiatric clinics, public or veteran's psychiatric hospitals, half-way houses, drug treatment centers, college or university counseling facilities, public correctional facilities and allied psychological service agencies.

While the delivery of psychological services comprises the program's primary thrust, this training is accomplished within a rigorous academic foundation in basic psychology including research methods. The program consists of three key areas of professional preparation: (1) Psychological Assessment-Evaluation Skills, (2) Counseling/Psychotherapy Skills, (3) Supervised Internship-Field Experience.

ADMISSION REQUIREMENTS

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
 - b. three letters of recommendation

University Graduate Policies and Procedures

(see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional course work may be required to remove individual deficiencies.

2. Core Courses: The following courses are required.

PSY 654	Laboratory to accompany PSY 671, 680, 681, 686, 688	10 hours
PSY 655	Clinical Internship	8 hours
PSY 671	Individual Intelligence Testing	4 hours
PSY 675	Implementation and Evaluation	4 hours
PSY 676	Clinical Psychopharmacology	4 hours
PSY 680	Individual-Group Personality Testing	4 hours
PSY 681	Psychoeducational Diagnosis	4 hours
PSY 686	Clinical Intervention I	4 hours
PSY 687	Clinical Intervention II	4 hours
PSY 688	Clinical Intervention III	4 hours
PSY 689	Clinical Intervention IV	4 hours
PSY 695	Research Methods	4 hours
3. Restricted Electives:

PSY 698	Research Report	
	or	
PSY 699	Thesis	4 hours
4. Thesis/Research Report: Four quarter hours of thesis or research report credit are required.
5. Examinations:
 - a. Diagnostic Examination must be successfully completed before beginning second academic year of the program.
 - b. Qualifying Examination given after the fourth quarter of study or equivalent.
6. Other Requirements: None specified

Total Quarter Hours Required	62
BOR Maximum Hours Allowed	65

 (See pages 61 and 62)

MASTER OF SCIENCE: INDUSTRIAL PSYCHOLOGY

The basic goal of the Industrial Psychology Graduate Program is to train individuals to apply psychological principles and skills effectively to industrial and related settings. The program is designed to lead to a terminal Master's degree whereby graduates from this program will be able to work effectively in a wide range of applied settings including industry, government, and the education fields.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
 - b. three letters of recommendation

University Graduate Policies and Procedures

(see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional course-work may be required to remove individual deficiencies.

2. Core Courses: The following courses are required.

PSY 605	Test Theory	4 hours
PSY 606	Applied Testing and Selection	4 hours
PSY 607	Motivation, Training and Performance Appraisal	4 hours
PSY 608	Applied Problems in Industrial Psychology	4 hours
PSY 641	Current Issues in Organizational Psychology	4 hours
PSY 660	Practicum I	4 hours
PSY 661	Practicum II	4 hours
PSY 686	Clinical Intervention	4 hours
PSY 691	Professional Problems	2 hours
PSY 692	Seminar: Assessment Centers	4 hours
PSY 695	Research Methods	12 hours
PSY 699	Thesis	11 hours
3. Restricted Electives: Consent of advisor required for all electives. 4 hours
4. Thesis: Thesis is required.
5. Examinations:
 - a. Diagnostic Examination must be successfully completed before beginning the second academic year of the program.
 - b. Qualifying Examination at the end of the first and second year of the program or equivalent.
 - c. Oral defense of thesis.
6. Other Requirements: None specified.

Total Quarter Hours Required	65
BOR Maximum Hours Allowed	65
(see pages 61-62)	

MASTER OF SCIENCE: SCHOOL PSYCHOLOGY

The School Psychology Graduate Program at FTU was initiated for the purpose of providing training and preparation for individuals interested in providing applied professional psychological services to schools and education fields. The School Psychology Program includes coursework enabling the graduate to meet the State of Florida Certification Requirements as a Specialist in School Psychology.

Admission Requirements

1. University Admission Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. To be considered for admission, applicants must submit: a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission
 - b. three letters of recommendation

University Graduate Policies and Procedures

(see pages 58-59 and the current FTU Graduate Studies Policy and Procedure Manual, available in the Office of Graduate Studies.)

Degree Requirements

1. Prerequisites: Although no specific prerequisites exist, additional coursework may be required to remove individual deficiencies.

2. Core Courses: The following courses are required.

PSY 654	Laboratory to accompany PSY 671, 680, 681, 686, 688	10 hours
PSY 656	School Internship	10 hours
PSY 671	Individual Intelligence Testing	4 hours
PSY 676	Clinical Psychopharmacology	4 hours
PSY 680	Individual-Group Personality Testing	4 hours
PSY 681	Psychoeducational Diagnosis	4 hours
PSY 684	Developmental Psychology	4 hours
PSY 686	Clinical Intervention I	4 hours
PSY 687	Clinical Intervention II	4 hours
PSY 688	Clinical Intervention III	4 hours
PSY 689	Clinical Intervention IV	4 hours
PSY 695	Research Methods	4 hours
3. Restricted Electives:

PSY 698	Research Report	
	or	
PSY 699	Thesis	4 hours
4. Thesis/Research Report: Four quarter hours of thesis or research report credit are required.
5. Examinations:
 - a. Diagnostic Examination must be successfully completed before beginning the second academic year of the program.
 - b. Qualifying Examination given after the fourth quarter of study or equivalent.
6. Other Requirements: None specified

Total Quarter Hours Required	64
BOR Maximum Hours Allowed	65

MASTER OF PUBLIC POLICY

Program Coordinator: *L. Tanzi*, AD 243, Phone 275-2292

The Departments of Political Science and Public Service Administration offer graduate work leading to the Master of Public Policy degree. This program offers a flexible course of study which prepares students for positions as policy analysts and administrators in various modes of public service. The interdisciplinary nature of the programs provide the opportunity to acquire knowledge, master techniques, and develop insights essential for the design, analysis, and effectuation of policy programs at all levels of government.

Two specialization areas are available. The "Politics of Policy Making" is primarily for individuals interested in the institutions, processes, and behaviors of the political system and the environment in which policy decisions are made. The "Bureaucracy and Public Policy" specialization focuses upon the implementation and administration of policy decisions.

Admission Requirements

1. University Admissions Requirements
(see pages 46 and 58)
2. Program Admission Requirements
 - a. Submission of a quantitative-verbal GRE score dating from no longer than 5 years previous to application for admission.
 - b. Submission of three letters of recommendation from indi-

duals capable of assessing the applicant's ability to undertake graduate work successfully.

University Graduate Policies and Procedures

See pages 58-59 as well as the current FTU Graduate Policy and Procedure Manual, available in the Office of Graduate Studies.

Degree Requirements

1. Prerequisites: Undergraduate study in Political Science or Public Administration desirable. However, individuals with strong backgrounds in related disciplines could be accommodated. Additional course work may be required to remove deficiencies.
2. Core Courses: The following courses are required.

PCL 600	Public Policy and Political Analysis	4 hours
PCL 603	Models for Policy Analysis	4 hours
or		
PAD 611	Planning and Organization for Economic and Social Development	4 hours
	and in addition one (1) course in STAT	
PCL 695	Research Methods	4 hours
PCL 698	Research Report	6 hours
PAD 605	Bureaucracy and Public Policy	4 hours
3. Restricted Electives: Select one hours vary

PCL 670	Issues in Urban Public Policy
PCL 672	Issues in State Public Policy
PCL 673	Issues in National Public Policy
PCL 675	Issues in International Public Policy
PAD 676	Issues in Economic Public Policy
PAD 677	Issues in Public Administration

Other electives may be selected from University-wide graduate offerings if each elective is approved by the student's graduate committee.
4. Research Report: Six quarter hours of credit must be earned for an internship or investigatory research project that results in a research report acceptable to the student's graduate committee.
5. Examinations: Individuals must perform satisfactorily on a written comprehensive examination designed to test knowledge and abilities in the core program and specialization selected. Normally this examination will not be administered until at least 40 quarter hours of graduate work are completed. An oral examination will be administered by the student's graduate committee following the completion of the student's research report.
6. Other Requirements:
 - a. No more than 9 quarter hours of "C" may be counted toward fulfilling degree requirements.
 - b. Exceeding 9 quarter hours of "C" and/or unresolved "I" grades in a specified program of study constitutes grounds for dismissal from graduate status.

Total Quarter Hours Required	50
BOR Maximum Hours Allowed	60
(see pages 61-62)	

COURSE DESCRIPTIONS

CLASSIFICATION OF COURSES

The University course numbering system is as follows:

100-299 are freshman and sophomore level courses and are designed primarily for these students.

300-499 are junior and senior level courses and are designed primarily for these and other advanced students. When approved for inclusion in an individual program of graduate study by a supervisory committee approved by the Dean of Graduate Studies, selected 400-499 courses may serve the needs of individual graduate students.

500-599 are *beginning graduate and advanced undergraduate* level courses—open to graduate students and those seniors who receive approval of the appropriate Dean(s).

600-699 are *beginning graduate and professional* level courses open only to graduate students.

SPECIAL COURSES

In addition to the regular courses listed in this bulletin, the following special courses may be available. Consult your academic advisor for details.

	Undergraduates		Special Grad ¹	Grad & Prof
	300	400	500	600
Special Topics	391	491	591	691
Seminar	392	492	592	692
Special Readings	393	493	593	693
Independent Study	394	494	594	694
Research Methods		495	595	695
Research Planning		496	596	696
Research		497	597	697
Research Report		498	598	698
Thesis		499		699

These course may be assigned variable credit. Some may be repeated upon approval.

¹The Special Graduate Courses are primarily for graduate students, but may be taken by advanced seniors with the consent of their deans.

PR: PREREQUISITE

A course in which credit must be earned prior to enrollment in the listed course.

CR: COREQUISITE

A course which must be taken concurrently with or prior to the listed course.

CI: CONSENT OF INSTRUCTOR

HOURS CODE

Each course listing is followed by a code which shows hours credit, contact hours, and quarters during which the course will normally be offered.

Example:

GEOL 201

4 (2,4) W

Physical Geology

Geology 201 carries four hours credit but requires six contact hours: two in class and four in laboratory or field work. It is scheduled to be offered in the Winter Quarter.

Quarter designation: F = Fall; W = Winter; S = Spring; Su = Summer.

AVAILABILITY OF COURSES

The University does not offer all of the courses listed in the catalog each year. The class Schedule should be consulted for those courses offered each quarter.



A

ACCOUNTANCY

ACCY 211 **3 (3,0) F,W,S,Su**
Financial Accounting I: Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations.

ACCY 212 **3 (3,0) F,W,S,Su**
Financial Accounting II: Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations.

ACCY 300 **5 (5,0) F,W,S,Su**
Financial Accounting: PR: Junior standing. Accounting concepts, financial statements, accounting cycle, monetary and fixed assets, inventories, current and long-term liabilities, equity structure of proprietorships, partnerships, corporations. An accelerated course. Credit may not be earned in both ACCY 300 and the ACCY 211, 212 sequence.

ACCY 305 **3 (3,0) F,W,S,Su**
Management Accounting: PR: ACCY 212 or ACCY 300 or equivalent. Business information requirements; cost accounting concepts and relationships, forecasting and budgeting. Not open to ACCY majors.

ACCY 314 **3 (3,0) F,W,S,Su**
Introduction to Accounting Theory and Practice: PR: ACCY 300 or equivalent. An in-depth review of accounting process, concepts, content of financial statements; framework of accounting theory; errors, cash vs. accrual; statement analysis.

ACCY 315 **5 (5,0) F,W,S,Su**
Intermediate Accounting I: PR: ACCY 314. An in-depth study of assets and current obligations. Income determination; present value applications; professional pronouncements.

ACCY 316 **5 (5,0) F,W,S,Su**
Intermediate Accounting II: PR: ACCY 315. An in-depth study of long-term obligations and stockholders' equity. Income determination; tax allocation; funds flow; price level adjustments.

ACCY 325 **4 (4,0) F,W,S,Su**
Cost Accounting: PR: ACCY 314. Cost concepts, measuring cost of goods manufactured; job order costing, process costing, standard cost, flexible budgets, variances, spoilage, waste and defectives, mix and yield, service allocation.

ACCY 341 **3 (3,0) F,S**
Governmental Accounting: PR: ACCY 212 or ACCY 300. Budget, accounting and reporting problems of state and national governments.

ACCY 410 **5 (5,0) F,W,S,Su**
Advanced Accounting: PR: ACCY 316. Problems of partnerships, business combinations, consolidated statements. Fund accounting principles and procedures and their relation to governmental accounting.

ACCY 425 **4 (4,0) F,W,S,Su**
Cost Analysis: PR: ACCY 325. Cost-volume-profit analysis, relevant costs for decisions, direct costing, budgeting (operational), responsibility accounting, segment performance measurement, transfer pricing, joint costs and by-products, quantitative techniques.

ACCY 430 **5 (5,0) F,W,S,Su**
Auditing: PR: ACCY 316. The principles, practices and procedures followed in the audit function. Preparation of related working papers and the audit report.

- ACCY 450** **5 (5,0) F,W,S,Su**
Federal Income Tax Accounting: Concepts and methods of determining taxable income of individuals, partnerships and corporations.
- ACCY 475** **2 (2,0) F,W,S,Su**
Current Selected Topics: PR: Completion of all other required accounting courses, or concurrent registration, or permission of the Department Chairman. An examination and discussion of current changes and controversial topics in financial reporting.
- ACCY 501** **4 (4,0)**
Financial Accounting Concepts: PR: Acceptance into the graduate program. The conceptual background for financial statements for external purposes including problems of the accounting period, the accrual concepts and changing price levels, etc.
- ACCY 601** **3 (3,0)**
Accounting Analysis: PR: Graduate standing and ACCY 501 or one year of accounting. (Not open for accounting majors.) Accounting as an information measurement system for internal planning and control; concepts and analytical techniques for accumulating costs of products and services.
- ACCY 610** **5**
Contemporary Accounting Theory: PR: Graduate standing and all of foundation courses or equivalents. An examination of the evolution of contemporary accounting theory. Emphasis is on current and future development.
- ACCY 612** **5**
Computers and Information Systems in Accounting: PR: Graduate standing and all foundation courses or equivalents. Introduction to design and management of information flows integrating accounting within the framework of information systems with applications demonstrated through computer models.
- ACCY 620** **5**
Advanced Auditing: PR: Graduate standing and all foundation courses or equivalents. The study of auditing problems with special emphasis on statistical sampling and the auditing of electronic data processing systems.
- ACCY 630** **5**
Cost Accounting for Management Decisions: PR: Graduate standing and all foundation courses or equivalents. Emphasis on cost finding and analysis for management decisions.
- ACCY 640** **5**
Taxation: PR: Graduate standing and all foundation courses or equivalents. An advanced study of tax law with emphasis on business taxes.
- ACCY 650** **5**
Specialized Accounting Problems: PR: Graduate standing and all foundation courses or equivalents. A survey of specialized and regulatory accounting practice with emphasis on SEC filing and governmental and institutional accounting.

AIR FORCE ROTC

- AFR 101** **1 (1,1) F**
The United States Air Force and Strategic Offensive Forces: PR: Qualification for Air Force ROTC or permission of Professor of Aerospace Studies. History, mission, organization and doctrine of the United States Air Force and a study of U.S. Strategic Offensive Forces.
- AFR 102** **1 (1,1) W**
Strategic Defense Forces: PR: AFR 101 or permission of Professor of Aerospace Studies. Concepts of aerospace defense. A study of the various systems and functions associated with defense against manned bombers and missiles.

- AFR 103** **1 (1,1) S**
Conventional Military Forces: PR: AFR 102 or permission of Professor of Aerospace Studies. A brief review of Army, Navy, and Marine Forces. An introduction to special operations and countersurgency.
- AFR 201** **1 (1,1) F**
The Birth of Airpower: PR: AFR 103 or approval of PAS. A study of the early development of manned flight from the 18th century balloonist through the achievement of mature airpower capabilities prior to World War II.
- AFR 202** **1 (1,1) W**
Airpower: Crisis and Maturity: PR: AFR 201 or approval of PAS. A review of fifteen years of airpower development, highlighting changes in aircraft technology and employment brought about by experiences in WW II and Korea.
- AFR 203** **1 (1,1) S**
The Aerospace Age: PR: AFR 202 or approval of PAS. A study of aerospace power in the contemporary world and its current employment as a force of stability.
- AFR 301** **3 (3,1) F**
Military Role in Contemporary Society: PR: GMC or two-year program selection and/or approval of PAS. Review and survey of military communicative skills. Examination of the military profession and its role in American Society.
- AFR 302** **3 (3,1) W**
Defense Policy and Strategy: PR: AFR 301 or approval of PAS. A study of the framework of defense policy and formation of defense strategy including political, economic and social constraints upon the national defense structure.
- AFR 303** **3 (3,1) S**
Implementation of Defense Policy: PR: AFR 302 or approval of PAS. An examination of defense implementation by the DOD, Congress and the Presidency, and the manner in which they impact on the decisionmaking process.
- AFR 401** **3 (3,1) F**
Leadership and Discipline in the Air Force: PR: AFR 303 or approval of Professor of Aerospace Studies. The need for Air Force leadership, professional responsibilities of the officer, and the need for discipline in the military.
- AFR 402** **3 (3,1) W**
Principles of Military Leadership and Management: PR: AFR 401 or approval of Professor of Aerospace Studies. Variables affecting military leadership, traits and interactional approaches to leadership, introduction to military management, and systems approach to Air Force management.
- AFR 403** **3 (3,1) S**
Air Force Management and the Junior Officer: PR: AFR 402 or approval of Professor of Aerospace Studies. Air Force personnel management policies and the military justice system as they affect the junior officer.
- AFR 404** **4 (4,0)**
Introduction to Flight (Pilot): PR: AFR 301, 302, 303 and/or permission of the Professor Aerospace Studies. An academic introductory study of weather, navigation. FAA regulations and flight radio procedures.

ALLIED HEALTH SCIENCES

- AHS 301** **3 (3,0)**
U. S. Health Care Systems: Organization and management of health care delivery systems in the United States; ethical, legal, community and professional relationships; needs, resources, programs, trends in health care.
- AHS 305** **5 (5,0) S**
Medical Terminology: A study of the language of medicine and allied health specialties, including word construction, definitions and application of terms.

- AHS 320** **3 (3,0) F**
Health Services Organization: PR: MGMT 301 or C.I. Health services organizational structure; departmental procedures; interdepartmental relationships.
- AHS 330** **3 (3,0)**
Interpretation of Clinical Tests: PR: CHEM 113 and ZOOL 334, or C.I. Introduction to laboratory tests and their evaluation; emphasis will be on tests relating to gas transport and enzymology.
- AHS 350** **3 (3,0) W**
Health Law: Principles of law as applied to the health field with special reference to health practices.
- AHS 410** **4 (4,0) S**
Community and Public Health Services: History and philosophy of public health, interphase of governmental, voluntary, and private health agencies; current community health problems, issues, and needs; social and economic factors.
- AHS 415** **4 (4,0) W**
Epidemiology: PR: STAT 201 or C.I. General concepts and scope of epidemiology; the distribution of selected diseases; factors influencing health and disease in a population.
- AHS 420** **3 (2,2) F**
Supervisory Management for Health Services Agencies: PR: AHS 320, or C.I. Budgeting, equipment analyses; inservice education; office environmental factors; department layouts; job descriptions; policy and procedure manuals; staffing; scheduling; labor unions.
- AHS 440** **4 (4,0) F**
Fundamentals of Medicine I: PR: ZOOL 324; or ZOOL 334 and ZOOL 335; or C.I. A study of the nature, cause and treatment of specific disease entities.
- AHS 441** **4 (4,0) W**
Fundamentals of Medicine II: PR: AHS 440 or C.I. A continuation of AHS 440.
- AHS 486** **3 (3,0)**
History and Future of Health Care: Health care institutions; purposes of health agencies, organizations and allied health professionals; new trends in health care delivery. Meets Advanced ESP requirements: designed for non-majors.
- AHS 501** **2**
Health Delivery Systems in the United States I: Organization, management and programs. Patterns of organization of delivery systems, manpower and resources, distribution, needs, scope of programs, consumer factors.
- AHS 502** **2**
Health Delivery Systems in the United States II: Legal and ethical aspects of vendors and consumers. Legislative process, enforcement, liability, licensing, court processes, conduct of a witness, confidentiality and privileged communications.
- AHS 503** **2**
Health Delivery Systems in the United States III: Community and professional relations. Interaction of health agencies and health professions. Planning, implementation, evaluation, cost containment. Trends in health care.

ART

- ART 201** **3 (2,4) F**
Design Fundamentals I: Materials, processes, form. Application to product design, communication design, environmental design, and the visual arts. Emphasis on two-dimensional design problems.

- ART 202** **3 (2,4) W**
Design Fundamentals II: Continuation of ART 201. Emphasis on color theory.
- ART 203** **3 (2,4) F,S**
Design Fundamentals III: Continuation of ART 202. Emphasis on three-dimensional design in the various sculptural media.
- ART 204** **3 (2,4)**
Film Design: A series of exercises in craft, technique, and design for the film, including animation.
- ART 211** **3 (2,4) F**
Drawing Fundamentals I: Drawing as a means of formal organization. Introduction to problems in drawing methods and media. Emphasis on descriptive techniques.
- ART 212** **3 (2,4) W**
Drawing Fundamentals II: Continuation of ART 211. Emphasis on traditions of spatial organization.
- ART 221** **3 (3,0) F**
The History of Art I: Painting, sculpture, and architecture from the Prehistoric Era through the Medieval Period.
- ART 222** **3 (3,0) W**
The History of Art II: Painting, sculpture, and architecture from the Renaissance to the 19th Century.
- ART 223** **3 (3,0) S**
The History of Art III: Painting, sculpture, and architecture of the 19th and 20th Centuries.
- ART 231** **4 (2,4)**
Visual Arts Overview: Analysis of the characteristics and scope of visual arts. Recommended for credit toward cultural and historical foundations section of the Environmental Studies Program.
- ART 301** **3 (2,4) F**
Lettering: PR: Six hours of Design Fundamentals or C.I. Workshop study of the classical and historic types styles.
- ART 302** **3 (2,4) W**
Graphic Design I: PR: Six hours Design Fundamentals and ART 301, or C.I. Principles of visual communication, methods, materials, and processes. Relationship of perceptual studies to graphic design.
- ART 303** **3 (2,4) S**
Graphic Design II: PR: ART 302, ART 341 or C.I. Development of studio techniques and problems stressing balance between articulation and succinct presentation of information.
- ART 304** **3 (2,4)**
Design In Advertising: PR: ART 201. Principles and techniques. Not open to art majors. Intended for visual arts education majors and general university elective.
- ART 305** **3 (2,4)**
Three-Dimensional Design: PR: ART 203 or C.I. Intermediate problems in three-dimensional materials, processes, forms.
- ART 308** **3 (2,4)**
Jewelry Design: PR: Consent of the instructor.
- ART 311** **3 (2,4)**
Intermediate Drawing: PR: Six quarter hours of Drawing Fundamentals or C.I. Intermediate problems in drawing. Emphasis on the human form.
- ART 321** **3 (3,0)**
Arts of Pre-Literate Societies: The visual arts in recent and contemporary primitive societies with emphasis on the cultures of Africa and Oceania.

- ART 322** **3 (3,0)**
Asian Art: An introduction to the history of visual arts of China, Japan, India and other Eastern cultures.
- ART 324** **3 (3,0)**
History of Photography: The development of still photography in terms of historical, aesthetic, and social impact on Western Culture from 1839 to the present.
- ART 341** **3 (2,4) F,W,S**
Photography: Consideration of basic technical and aesthetic factors in using still photography as a vehicle for visual, artistic expression.
- ART 342** **4 (3,3) W**
Cinematography: PR: ART 204 or C.I. Consideration of basic technical and aesthetic factors involved in using motion pictures as a vehicle for visual, artistic expression.
- ART 351** **3 (2,4) F,W,S**
Painting: PR: Three quarter hours in Design Fundamentals and three quarter hours in Drawing Fundamentals or C.I.
- ART 361** **3 (2,4)**
Printmaking: PR: Three quarter hours of Drawing Fundamentals or C.I. Basic procedure and processes in printmaking. Formal and expressive characteristics of the print media.
- ART 371** **3 (2,4) F,W,S**
Sculpture: PR: Six quarter hours in Design Fundamentals, to include three quarter hours in three-dimensional work, or C.I.
- ART 381** **3 (2,4) F,W,S**
Ceramics: PR: ART 203 or C.I. Basic concepts of ceramic design, experience in processes of forming, decorating, glazing, and firing pottery.
- ART 382** **3 (2,4)**
Experiments in Art and Technology: PR: Consent of instructor.
- ART 402** **3 (2,4) F**
Advanced Graphic Design I: PR: ART 303, acceptable portfolio or C.I. Typographic organization, paper, and light-sensitive materials related to design and production techniques.
- ART 403** **3 (2,4) W**
Advanced Graphic Design II: PR: ART 402 or C.I. Pictorial and symbolic expression in creation of poster design, symbols, magazine and book design.
- ART 404** **3 (2,4) S**
Advanced Graphic Design III: PR: ART 403 or C.I. Individual problems providing students with an opportunity to initiate search for an independent formula of graphic design principles.
- ART 405** **3 (2,4)**
Advanced Three-Dimensional Design: PR: ART 305. May be repeated for credit. Advanced problems in three-dimensional materials, processes, form.
- ART 408** **3 (2,4)**
Advanced Jewelry Design: PR: ART 308. May be repeated for credit.
- ART 409** **3 (2,4)**
Fibers, Fabrics, Textiles and Synthetics: Textile design and production, including non-loom and loom weaving processes.
- ART 410** **3 (2,4)**
Metals, Woods, Leathers and Stones: Processes and techniques of production in these traditional craft materials.
- ART 411** **3 (2,4)**
Advanced Drawing: PR: ART 311. May be repeated for credit.

- ART 421** **4 (3,3)**
Purposes of Art: An Analysis and Appreciation of the visual arts in terms of their various purposes.
- ART 425** **4 (4,0)**
Religious Symbolism in the Visual Arts: A study of the origin, migration, and transmutation of religious signs, symbols and images in art history.
- ART 431** **4 (3,3)**
Developing Visual Creativity: Analysis of the nature of the creative faculties and the development of creativity through visual processes.
- ART 433** **3 (3,0)**
Theory and Criticism of the Visual Arts: Criteria of criticism; analysis of works, elements of psychology and sociology of art. Developments in the arts of the 20th Century.
- ART 434** **3 (3,0)**
Art and Technology: The impact of technological developments in the visual arts of the 20th Century.
- ART 435** **4 (4,0)**
Environmental Art: Analysis of aesthetic design factors, related to city planning, architecture, product design, and experimental environmental arts.
- ART 441** **3 (2,4) F,S**
Advanced Photography: PR: ART 341. May be repeated for credit.
- ART 442** **4 (3,3)**
Advanced Cinematography: PR: ART 342. May be repeated for credit.
- ART 443** **3 (2,4)**
Special Problems in Photography: PR: ART 341 or C.I. A series of directed photographic problems of a research nature. May be repeated for credit.
- ART 451** **3 (2,4) F,W,S**
Advanced Painting: PR: ART 351. May be repeated for credit.
- ART 461** **3 (2,4)**
Advanced Printmaking: PR: ART 361. May be repeated for credit.
- ART 471** **3 (2,4) F,S**
Advanced Sculpture: PR: ART 371. May be repeated for credit.
- ART 481** **3 (2,4) F,W,S**
Advanced Ceramics: PR: ART 381. May be repeated for credit.
- ART 482** **3 (2,4)**
Advanced Experiments in Arts and Technology: PR: ART 391. May be repeated for credit.
- ART 484** **3 (0,6)**
Senior Studio and Exhibition: PR: By petition (see page 124). Required of all B.F.A. degree candidates. Not open to B.A. degree candidates.

B

BIOLOGY

- BIOL 103** **4 (3,2) F,S**
Biological Principles: A study of various biological factors which affect the health and survival of man in modern society. Meets ESP requirements; designed for non-majors.
- BIOL 105** **4 (3,3) W**
Biology and Environment: Biological implications of the interaction among human society, population, and technology in relation to the environment and natural systems. Meets ESP requirements: designed for non-majors.

- BIOL 110** **5 (4,2) F,W**
Basic Biology: Basic principles, unifying concepts and facts of modern biology. Introduction to quantitative biological experimentation. For Biological Sciences, Allied Health Sciences and preprofessional majors.
- BIOL 332** **5 (3,4) S**
Cell Physiology: PR: 11 hours in biological sciences or C.I. CR: CHEM 322. Basic physiological processes, cellular organization, exchange of materials, conversion of energy, irritability and contractibility.
- BIOL 350** **4 (3,3) F**
Principles of Ecology: PR: 12 hours in biological sciences. Elements of ecosystems, biogeochemical cycling, environmental factor interactions, population dynamics and evolution, communities, and succession.
- BIOL 360** **4 (3,3) S**
Genetics: PR: BIOL 110. Basic principles of heredity as applied to plants and animals. Laboratory will emphasize work with *Drosophila*.
- BIOL 363** **4 (3,2) W, even years**
Genetics and Man: BIOL 103 or 110. Basic principles of genetics as illustrated by human heredity. Meets ESP requirements: designed for non-majors.
- BIOL 410** **5 (3,6)**
Microtechnique: PR: 1 yr. biological science. Preparation of plant and animal tissue for microscopic study; embedding; use of various microtomes; staining procedures; whole mounts.
- BIOL 450** **5 (3,6) F**
Limnology: PR: BIOL 350 or C.I. Introduction to principles of limnology and methods for freshwater ecology with respect to physical, chemical and biological parameters.
- BIOL 451** **5 (3,6) W**
Freshwater Systems: PR: BIOL 450 or C.I. Primary and secondary productivity and interaction among factors such as nutrients, pollutants, temperature radiation, turbidity, and seasons.
- BIOL 455** **4 (3,3) S, odd years**
Community Ecology: PR: BIOL 350 and STAT 301; or C.I. Emphasis on dynamics of biotic communities, plant community classification and quantitative description. Interaction of soils, climate and animals in succession.
- BIOL 463** **3 (3,0) W**
Organic Evolution: PR: 11 hours in biological sciences including BIOL 360. An outline of evolutionary principles, natural selection and phylogeny; origin of variation and origin of species.
- BIOL 470** **3 (3,0)**
History of Biology: PR: Junior standing. People and events from Aristotelian times to the present; development of the science of biology.
- BIOL 484** **3 (3,0) S, odd years**
Biological Nature of Man: Man's behavior, reproduction, development, diversity, heredity, evolution, population control, aggression, and biological needs in contemporary society. Meets advanced ESP requirements: designed for non-majors.
- BIOL 485** **3 (3,0) S, even years**
Biology and Society: Biological concepts applied to current human problems — food production, pollution, disease, extinction, and disrupted ecosystems. Meets advanced ESP requirements: designed for non-majors.
- BIOL 554** **5 (3,6)**
Ecology of Running Water: PR: BIOL 450 or C.I. Biological adaptations and communities in relation to channel formation, flow dynamics, and physico-chemical aspects of running waters.

- BIOL 560** **5 (3,6) W, odd years**
Genetic Mechanisms: PR: BIOL 360 or C.I. Principles of cytological, developmental, human and population genetics.
- BIOL 563** **3 (3,0) W**
Evolutionary Biology: PR: 11 hours in biological sciences including BIOL 360. An outline of evolutionary principles, natural selection and phylogeny; origin of variation and species. Special project required.
- BIOL 618** **3 (2,2) S**
Field Methods for Biology: PR: Two years of biology. Experimental techniques and design in field biological research.
- BIOL 619** **3 (2,2) F**
Laboratory Methods for Biology: PR: BIOL 332 and MICR 430. Experimental techniques and design in laboratory biological research.
- BIOL 620** **3 (3,0) S, even years**
Molecular Biology: PR: CHEM 442 or C.I. A course which considers the molecular basis of cellular structures and their functions. Emphasis on current information and research in the area of bioenergetics, cellular regulation, and cellular specialization.
- BIOL 621** **4 (4,0)**
Development Biology: PR: 12 hours Biology or C.I. An in-depth examination of growth and development in plants, animals and protista stressing patterns and mechanisms.
- BIOL 632** **5 (3,6) F, even years**
Organismal Physiology: PR: BIOL 332 and CI. Modern experimental methods and detailed study of specific phases of the physiology of higher vertebrates.
- BIOL 653** **5 (3,6) W**
Population Ecology: PR: Ecology, statistics and 2 years of biological science. Population as an ecological unit with emphasis on growth, regulation, dynamics, competitive interactions and predation.
- BIOL 675** **4 (4,0) W, even years**
Contemporary Studies in Environmental Biology: PR: Graduate standing. Analysis of current publications and developments in science and technology applicable to environmental problems.

BOTANY

- BOT 100** **4 (2,4) F,W**
General Botany: Introduction to botany; plant structure and function, including a survey of the plant kingdom giving special emphasis to forms important to man.
- BOT 320** **5 (3,6) F, even years**
Comparative Morphology of Plants: PR: BOT 100. A sequential survey of plants with emphasis on evolutionary relationships, structure and function.
- BOT 325** **4 (3,3) F, odd years**
Plant Anatomy: PR: BOT 100. A study of the development, structure and function of the principal organs and tissue of vascular plants.
- BOT 345** **5 (3,6) S, odd years**
Plant Taxonomy: PR: BOT 100. An introduction to systematics, classification and identification of vascular plants with emphasis on the flora of peninsular Florida.
- BOT 371** **3 (3,0) W, even years**
Plants and Man — Ethnobotany: Man's historical and modern uses of plants economically important in various cultures. Designed for non-majors.
- BOT 372** **3 (3,0)**
Plants and the Urban Environment: The selection, placement, propagation

and care of ornamental plants in residential, commercial and industrial areas. Designed for non-majors.

BOT 430 4 (3,3) W, odd years

Plant Physiology: PR: BIOL 332, or C.I. A study of the mechanisms used by plants to cope with their environment.

BOT 441 4 (3,3) W, even years

Freshwater Algae: PR: BOT 100 or C.I. A lecture-laboratory course to survey the physiology, diversity and ecology of the freshwater algae.

BOT 443 4 (2,6)

Mycology: PR: BOT 320 or MICR 200 or C.I. A lecture-laboratory course emphasizing form and function of major fungous groups.

BOT 453 3 (3,0) W, odd years

Plant Geography: PR: BIOL 350 or BOT 451 or C.I. The major climatic plant formations of the world and historical plant geography.

BOT 542 4 (3,3)

Bryology: PR: BOT 320 or C.I. A lecture-laboratory survey course on the diversity and classification of mosses, liverworts and hornworts with special emphasis on those found in Florida.

BOT 549 5 (3,6) S, odd years

Plant Biosystematics: PR: BOT 345. Studies of evolutionary relationships among plant taxa and populations utilizing cytological, morphological, and biochemical techniques.

BOT 647 4 (3,3) S, even years

Field Botany: PR: 12 hours in biological sciences or science teaching experience or C.I. Classification and identification among lower and higher plant groups with emphasis on field experience. Major reference sources reviewed.

BUSINESS ADMINISTRATION

BADM 301 3 (3,0) F,W,S

Business Concepts: PR: Junior standing. The relationship of business and society. Discussion sections are devoted to developing the skill of solving organization problems. Not useable for BSBA degree credit.

BADM 324 3 (3,0) F,W,S,Su

Business Operations Management. Introduction to the management of operation systems found in goods — creating functions, service-generating functions, distribution functions and governmental functions.

BADM 371 3 (3,0)

Legal Environment of Business: PR: Junior standing. The presentation of law as an expanding social and political institution in the environment of the business enterprise.

BADM 372 3 (3,0)

Business Law: PR: BADM 371. Recognized commercial organizations including agencies, partnerships, corporations. An examination of each and their functions in the business world.

BADM 373 3 (3,0)

Business Law: PR: BADM 371. (BADM 372 desirable). An examination of the law underlying the transfer and sale of goods, commercial paper and secured transactions including their interaction with the commercial environment.

BADM 374 3 (3,0) S

Property Law: PR: BADM 371 or C.I. Includes bailments, real and personal property, and security interests therein, insurance, suretyship and guaranty.

BADM 444 3 (3,3)

International Business Operation: PR: Senior standing or C.I. An integra-

tion of economics and functional areas of business focused upon the problems of managing international business operations through cases emphasizing financial and marketing problems.

BADM 485

4 (4,0) F,W,S,Su

Business Policies: PR: Senior standing, completion of core requirements. The student is expected to utilize the subject matter in the business core and his major in analyzing business problems. Written cases are required.

BADM 490

2 (2,0)

Senior Seminar: Business in Human Affairs: Business issues and problems as they relate to human affairs. Primarily intended for the senior student in the Advanced Environmental Studies seminars. Business students not admitted.

BADM 501

3 (3,0)

Business Environment and Business Law: PR: Acceptance into the graduate program. An analysis of the legal and socio-economic environment surrounding business practices as affected by significant State and Federal legislation and regulation.

BADM 601

3 (3,0)

Operations Research Models for Business: PR: Graduate Standing and ECON 521 or equivalent. Quantitative techniques useful for the solution of business problems. Mathematical model building to aid the decision-making process is stressed.

BADM 611

3 (3,0)

Systems Analysis for Business Problem Solving: PR: Graduate Standing and MGMT 501 or equivalent. A conceptual framework of the systems approach for analyzing business problems, related developments in systems theory and applications to business.

BADM 621

3 (3,0)

Business Policy and Responsibility: PR: Graduate Standing and all foundation courses or equivalent. Functions and responsibilities of management, motivation of the business man and factors governing business decisions.

BADM 637

3 (3,0)

Simulation of Dynamic Systems: PR: Graduate Standing. A survey of techniques for conducting simulation experiments on digital computers. These experiments involve mathematical and logical models of a business or economics system.

C

CHEMISTRY

CHEM 111

5 (4,2) F,W,Su

General Chemistry (Fundamentals): An introductory study of the fundamental concepts of chemistry, oriented toward AHS and Biology Education majors.

CHEM 112

3 (3,0) F,W,S

General Chemistry (Organic): PR: CHEM 111. A survey of organic chemistry stressing its applications to our society. The chemistry of functional groups will be related to industrial and natural processes.

CHEM 113

3 (3,0) W,S,Su

General Chemistry (Biochemistry): PR: CHEM 112. A conceptual approach to the chemistry of living systems.

CHEM 115

1 (0,3) S

General Chemistry Laboratory (Organic-Biochemistry): PR: CHEM 112. An introduction to organic and biochemical laboratory operations.

- CHEM 261** **4 (4,0) F,W,Su**
Chemistry Fundamentals I: PR: High School Chemistry or CHEM 111. Basic physical theory of chemical reactivity, atomic structure, chemical bonding, periodicity, stoichiometry, equilibria, thermodynamics, and kinetics.
- CHEM 262** **3 (3,0) F,W,S**
Chemistry Fundamentals II: PR: CHEM 261. Continuation of CHEM 261.
- CHEM 263** **3 (3,0) W,S,Su**
Chemistry Fundamentals III: PR: CHEM 262. Continuation of CHEM 262.
- CHEM 264** **1 (0,3) F,W,S**
Chemistry Fundamentals Laboratory: PR: CHEM 111 or CHEM 261. Illustration of chemical principles and introduction to the techniques of inorganic and physical chemistry.
- CHEM 265** **2 (1,3) F,S**
Analytical Fundamentals: PR: CHEM 264. Development of basic analytical skills and problem practice in stoichiometry, solution chemistry, and oxidation-reduction.
- CHEM 321** **4 (4,0) F,W**
Organic Chemistry I: PR: CHEM 263. Theory and applications of organic chemistry: structure, bonding, kinetics, thermodynamics, reaction mechanisms, synthesis, and stereochemistry. Structure elucidation via spectrometric techniques.
- CHEM 322** **3 (3,0) W,S**
Organic Chemistry II: PR: CHEM 321. Continuation of CHEM 321.
- CHEM 323** **3 (3,0) S,Su**
Organic Chemistry III: PR: CHEM 322. Continuation of CHEM 322.
- CHEM 324** **2 (0,6) W,S**
Organic Laboratory Techniques I: PR: CHEM 321. An introduction to the laboratory techniques of organic chemistry including the preparation, reaction, and analysis of organic compounds.
- CHEM 325** **2 (0,6) F**
Organic Laboratory Techniques II: PR: CHEM 322 and CHEM 324. Open-end laboratory to develop synthesis, techniques and structure elucidation skills.
- CHEM 341** **3 (3,0) W**
Clinical Biochemistry: PR: CHEM 322. The biochemistry of proteins, carbohydrates, lipids, and nucleic acids will be developed and used to analyze health-related problems.
- CHEM 351** **3 (2,3) F,W**
Analytical Chemistry I: PR: CHEM 265. Lecture-Laboratory. Laboratory practice of classical and instrumental methods. Emphasis on problem solutions and choice of analytical procedure.
- CHEM 352** **3 (1,6) W,S**
Analytical Chemistry II: PR: CHEM 351. Continuation of CHEM 351.
- CHEM 355** **5 (3,6) F**
Clinical Analytical Chemistry: PR: CHEM 263 and CHEM 264. The theory and practice of analytical chemistry as it pertains to the health sciences, including statistics, acid-base analysis, electrometric methods, spectroscopy and chromatography.
- CHEM 361** **5 (4,2) F**
Physical Chemistry I: PR: CHEM 263, PHYS 212, and MATH 322. Rigorous treatment of atomic and molecular structure, thermodynamics, kinetics, and chemical bonding.
- CHEM 362** **3 (3,0) W**
Physical Chemistry II: PR: CHEM 361. Continuation of CHEM 361.

- CHEM 363** 3 (3,0) S
Physical Chemistry III: PR: CHEM 362. Continuation of CHEM 362.
- CHEM 364** 2 (0,6) W
Physical Chemistry Laboratory I: PR: CHEM 351 and CHEM 361. Classical as well as modern instrumental techniques coupled with computer data processing to measure physical properties and determine atomic and molecular parameters.
- CHEM 365** 2 (0,6) S
Physical Chemistry Laboratory II: PR: CHEM 362 and CHEM 364. Continuation of CHEM 364.
- CHEM 421** 3 (3,0) F, odd years
Advanced Organic Chemistry I: PR: CHEM 323 and CR: CHEM 361. Theoretical and physical-organic concepts of organic systems from the perspective of modern structural theory, thermodynamics and kinetics.
- CHEM 422** 3 (3,0) F, even years
Advanced Organic Chemistry II: PR: CHEM 323 and CR: CHEM 361. A study of class reactions from a mechanistic and synthetic viewpoint and including recent and developing areas of importance.
- CHEM 431** 4 (4,0) S
Inorganic Chemistry: CR: CHEM 363. A discussion of descriptive inorganic chemistry based on various bonding theories, thermodynamics and kinetics.
- CHEM 441** 3 (3,0) F,W
Biochemistry I: PR: CHEM 323. A consideration of proteins, carbohydrates, nucleic acids, enzymes and their effect on biochemical systems, and inter-relationship of intermediary metabolism.
- CHEM 442** 3 (3,0) W,S
Biochemistry II: PR: CHEM 441. Continuation of CHEM 441.
- CHEM 443** 3 (3,0) S
Biochemistry III: PR: CHEM 422. Continuation of CHEM 442.
- CHEM 444** 2 (0,6) W
Biochemical Methods: PR: CHEM 113 or CHEM 441, and CHEM 352. A laboratory course stressing the application of the chemical arts to the separation, identification, and quantification of materials of biological significance.
- CHEM 450** 3 (1,6) W, even years
Analytical Methods Development: PR: CHEM 352. A lecture-laboratory course in which students propose and evaluate procedures for inorganic and organic analyses.
- CHEM 451** 5 (3,6) F
Advanced Analytical Laboratory Technique: PR: CHEM 323, CHEM 352, and CHEM 363. A lecture-laboratory course designed to give in-depth coverage to modern methods of analysis including electrochemistry, spectroscopy, and separation techniques.
- CHEM 461** 3 (3,0) S, even years
Advanced Physical Chemistry: CR: CHEM 363 and PR: MATH 324. A rigorous treatment of selected topics of thermodynamics, kinetics, quantum mechanics, and structure.
- CHEM 471** 3 (2,3) S, odd years
Nuclear and Radiochemistry: PR: CHEM 352 and CR CHEM 362. A lecture-laboratory course examining theories of fundamental particles, the chemical effects of nuclear transformations and the special uses of isotopes.
- CHEM 475** 3 (3,0) W, odd years
Concepts in Industrial Chemistry: PR: CHEM 361. An introduction to industrial practices emphasizing the application of chemical principles in the development of a commercial process or product.

- CHEM 481** **3 (3,0)**
Chemistry in Society: Chemical processes related to everyday living and/or topics of current concern to society. Meets advanced ESP requirements: designed for non-majors.
- CHEM 501** **2 (2,0) F**
Chemical Structure I: PR: CHEM 323, 352, and 363; or equivalent. Concepts in molecular structure and the relationships between structure and the chemical and physical properties of a substance.
- CHEM 502** **2 (2,0) W**
Chemical Structure II: PR: CHEM 501. Continuation of CHEM 501.
- CHEM 503** **2 (2,0) S**
Chemical Structure III: PR: CHEM 502. Continuation of CHEM 502.
- CHEM 504** **2 (2,0) F**
Chemical Dynamics I: PR: CHEM 363 or equivalent. Dynamics of chemical reactions and physical processes including equilibrium systems catalysis, transport processes and physical phenomena at interfaces.
- CHEM 505** **2 (2,0) W**
Chemical Dynamics II: PR: CHEM 504. Continuation of CHEM 504.
- CHEM 506** **2 (2,0) S**
Chemical Dynamics III: PR: CHEM 505. Continuation of CHEM 505.
- CHEM 507** **2 (2,0) F**
Chemical Synthesis I: PR: CHEM 323, 324, and 363; or equivalent. Survey of chemical synthesis from the standpoint of planning a synthesis, intermediates, special techniques, protection of functional groups, experimental design and optimization of reaction conditions.
- CHEM 508** **2 (2,0) W**
Chemical Synthesis II: PR: CHEM 507. Continuation of CHEM 507.
- CHEM 509** **2 (2,0) S**
Chemical Synthesis III: PR: CHEM 508. Continuation of CHEM 508.
- CHEM 671** **3 (1,6) F**
Separation Processes: PR: CHEM 324 & 363; or equivalent. A study of the basic operations utilized in separation processes. Topics will include distillation, azeotropic distillation, solvent extraction, absorption, crystallization, filtration and ion exchange.
- CHEM 672** **3 (3,0) W**
Chemical Processes: PR: CHEM 671 or equivalent. A case study approach which reviews the sequence and strategy involved in the development of selected chemical processes.
- CHEM 673** **3 (2,3) S**
Process Kinetics and Control: PR: CHEM 352 and 672; or equivalent. A case study approach analyzing kinetic data and techniques used in the design of reactors and process control systems.
- CHEM 674** **2 (2,0) F**
Chemical Process Economics: PR: CI. Consideration of the various cost factors involved in the economics of a chemical process and methods used in evaluating relative economics of various processes.

CIVIL ENGINEERING & ENVIRONMENTAL SCIENCES

- CEES 301** **3 (3,0)**
Environmental Engineering Biology: PR: ENGR 152. Principles of biology applicable to the engineering of water supply and treatment, wastewater treatment and disposal, waste degradation and environmental quality analysis and protection.

- CEES 321** **3 (2,3)**
Surveying: CR: Junior Standing. Theory and field practice in engineering measurements, and the reduction and adjustment of data.
- CEES 322** **3 (2,2)**
Engineering and Environmental Geology: Principles of physical geology with emphasis on engineering and environmental topics. Study of land forms, geologic maps, geologic structure, weathering, groundwater, mass wasting, and earthquakes.
- CEES 351** **4 (4,0)**
Structural Mechanics: PR: ENGR 312. Analysis of statically indeterminate structures by flexibility and stiffness methods, and energy methods. Analysis of columns. Plastic bending.
- CEES 401** **3 (2,3) F**
Environmental Engineering - Chemical Foundations I: Engineering applications of physical and analytical chemistry in the treatment of water and wastewater.
- CEES 402** **3 (2,3) W**
Environmental Engineering - Chemical Foundations II: PR: CEES 401 or C.I. Continuation of CEES 401 to include organic chemistry and biochemistry and their application in environmental engineering.
- CEES 411** **4 (4,0) F**
Environmental Engineering — Water Supply: CR: ENGR 332. Water resources, hydrologic cycle, water quality, chemistry of natural water, water treatment, transmission and distribution.
- CEES 412** **4 (4,0) W**
Environmental Engineering — Wastewater: CR: ENGR 332. Drainage systems, collection and transmission of wastewater, channel flow, biodegradation of organic wastes, principles of wastewater treatment, effluent and sludge handling and disposal.
- CEES 414** **3 (3,0) S**
Sanitary Systems Design: PR: CEES 411 and 412 or C.I. Planning capacity and design of water distribution systems, sanitary sewerage, storm drainage systems, water and wastewater treatment plants.
- CEES 417** **4 (4,0)**
Environmental Health: PR: ENGR 361. Selected topics in industrial hygiene, occupational and radiological health hazards, and pollution effects, such as those due to air, noise, solid wastes, etc.
- CEES 431** **4 (4,0)**
Geotechnical Engineering I: PR: ENGR 312 and ENGR 332. Nature of soils, classification, engineering properties, consolidation, seepage, compaction and soil investigation.
- CEES 451** **4 (4,0)**
Matrix Methods of Structural Analysis: PR: ENGR 312. Structural analysis of beams, frames, and plates by matrix methods.
- CEES 455** **3 (2,2)**
Structural Steel Design: PR: ENGR 312. Design of steel structural members. Selected topics in beam design, column design, plastic design, connections and built-up members.
- CEES 457** **3 (2,2)**
Structural Concrete Design: PR: ENGR 312. Principles of designing reinforced concrete members. Selected topics in concrete mixes, beams, columns, and ultimate analysis.
- CEES 461** **3 (3,0)**
Transportation Engineering: PR: ENGR 341 and 371. Investigation of all forms of transport — highway, rail, water, air. Systems approach to planning, design, construction, operation, and administration of transportation networks.

- CEES 471** **3 (3,0)**
Urban Planning: PR: ENGR 342. History and principles of planning. Basic economic, land use, population, conservation, and government planning concepts. Quantitative methods for comprehensive studies of urban development.
- CEES 501** **3 (2,3) F**
Environmental Engineering — Chemistry I: Study of fundamental principles of physical and analytical chemistry applicable to treatment of water and wastewater. Chemical thermodynamics, chemical kinetics, chemical equilibria, water analysis.
- CEES 502** **3 (2,3) W**
Environmental Engineering — Chemistry II: PR: CEES 501 or C.I. Continuation of CEES 501 to include study of fundamental principles of organic chemistry and biochemistry as applied to environmental quality control, biodegradation of wastes, and wastewater analysis.
- CEES 503** **4 (4,0)**
Environmental Impact Assessment: PR: C.I. Evaluating, estimating, and predicting the effects of structures, processes, and systems upon the environment and the effects of environmental changes upon human populations.
- CEES 518** **3 (3,0)**
Hydraulic Engineering: Application of principles of fluid mechanics to engineering problems. Topics include open channel flow, flow in conduits, hydraulic machinery, reservoir planning, and other hydraulic works.
- CEES 531** **4 (4,0)**
Geotechnical Engineering II: PR: CEES 431 or C.I. Earth pressures, settlements, bearing capacity, pile foundations, slope stability, stabilization.
- CEES 561** **4 (4,0)**
Design Elements of Transportation Systems: PR: CEES 461. Study of geometric and construction design elements in the engineering of transportation systems.
- CEES 563** **4 (4,0)**
Traffic Engineering: PR: CEES 461 & ENGR 371. Study of operator and vehicle characteristics, street capacity, signals, signs and markings.
- CEES 581** **4 (4,0)**
Water Resources Engineering: Systems identification and solution to complex water allocation problems, including hydrology, hydraulics, pressure conduits, open channels, and other engineering designs and operations using economic analysis and operations research techniques.
- CEES 601** **4 (4,0)**
Unit Operations and Processes of Sanitary Engineering I: PR: CEES 411 and CEES 412. Theory and design of physical, chemical, and biological operations and processes used in sanitary engineering.
- CEES 602** **4 (4,0)**
Unit Operations and Processes of Sanitary Engineering II: Continuation of CEES 601. Theory and design of physical, chemical, and biological operations and processes.
- CEES 603** **2 (1,3)**
Unit Operations and Processes Laboratory: PR: CEES 502 or C.I. Laboratory exercises in physical, chemical, and biological processes.
- CEES 604** **3 (3,0)**
Water and Wastewater Treatment Systems: PR: C.I. Integration of unit operations and processes into treatment systems. Emphasis will be placed on functional hydraulic, and economic design using computers.
- CEES 614** **3 (3,0) S**
Water and Wastewater Systems Design: PR: CEES 411 and 412 or C.I. Project course on design of water and wastewater systems.

- CEES 615** **3 (3,0)**
Atmospheric Pollution Control: Atmospheric composition and dynamics, sources and nature of contaminants, toxicity thresholds and biological significance, engineering methods of measurement and control.
- CEES 618** **4 (4,0)**
Solid Wastes Management: Study of the extent and characteristics of the solid waste problem, collection and disposal systems, and environmental interfaces and effects with emphasis on micro and macro modeling.
- CEES 620** **3 (3,0)**
Groundwater and Seepage. Theories of groundwater movement, geological factors, analysis techniques, etc. Emphasis on practical considerations.
- CEES 625** **3 (3,0)**
Advanced Topics in Engineering Geology: Geologic aspects of major civil engineering works including dams, reservoirs, urban development, transportation systems, etc.
- CEES 630** **3 (3,0)**
Foundation Analysis and Design I: Analysis and design of fundamental foundation units including spread footings, combined footings, mats, and retaining walls.
- CEES 631** **3 (3,0)**
Foundation Analysis and Design II: Continuation of topics in CEES 630 including sheet piles and pile foundations.
- CEES 651** **3 (3,0)**
Structural Analysis: PR: CEES 351 and 451 or equivalent. Application of modern structural analysis to include optimization and matrix methods to the design of real structures.
- CEES 655** **3 (3,0)**
Steel Design: PR: CEES 451 and 455 or equivalent. Design of complete steel structures to include economics, plastic design and real building examples.
- CEES 657** **3 (3,0)**
Concrete Design: PR: CEES 451 and 457 or equivalent. Design of concrete structures to include economics, slabs, prestressed concrete, and real building examples
- CEES 661** **4 (4,0)**
Land Use and Transportation Planning: PR: CEES 461, 471, or C.I. Study of interrelated factors in land use and transportation planning.
- CEES 665** **4 (4,0)**
Mass Transportation Systems: PR: C.I. Planning, design, construction, operation and administration of mass transportation systems.
- CEES 671** **4 (4,0)**
Public Works Engineering: PR: C.I. Principles and practices, operation and maintenance, equipment, utilities, planning and design, etc.
- CEES 672** **4 (4,0)**
Regional Planning, Design, and Development: PR: CEES 661. Project course dealing with planning, design, and development of regional systems, including projections, case studies, design alternatives, environmental impact, etc.

COMMUNICATION

- COM 100** **4 (4,0) F,W,S,Su**
Basic Communication: Survey of basic factors affecting human interaction through communication; theories and models of communication; contributions of behavioral sciences and related arts; mass media in society.
- COM 301** **4 (4,0) F,W,S,Su**
Communication as a Behavioral Science: Basic principles of the behavioral science approach to the study of contemporary communication.

- COM 310** **4 (4,0)**
History of the Motion Picture: Development of the film industry, its social and economic impact. Same as THA 310.
- COM 311** **4 (4,0) F,W,S,Su**
Business and Professional Communication: PR: SPE 101 or C.I. Theoretical and practical training in effective presentational speaking for business and professions.
- COM 312** **4 (4,0) F,S**
Leadership Through Oral Communication: A theoretical and practical investigation of leadership in oral communication situations, principles of parliamentary law, and approaches to problem solving.
- COM 313** **4 (4,0) W**
Interpersonal Communication: Nature of the communication process; variables affecting the process and the individuals involved. Analysis of communication models, interactant behavior, situational cues, verbal and nonverbal messages.
- COM 320** **4 (4,0) F**
Introduction to Communicative Disorders: Etiology, symptoms, and methods of diagnosing and treating communicative disorders. For beginning and prospective majors in Communicative Disorders.
- COM 321** **4 (4,0) S**
Biolinguistics: The Communicative Dyad: Species-inherited communicative bonding: Evolution of mother-infant dyads in mankind and animals. Foundations of biolinguistic and social imprinting with implications for communicative disorders.
- COM 350** **4 (4,0)**
Oral Communication for Television: PR: SPE 101, Practice and performance speech preparation and delivery for television. Types of speeches include television demonstrative, television stimulative and the television persuasive. Speeches televised in television laboratory.
- COM 363** **4 (4,0) Su**
Group Interaction and Decision Making: A study of small group processes. Attention is given to problem solving, leadership emergence, conformity behavior, and group member role responsibilities.
- COM 377** **4 (4,0) S**
Differential Diagnosis in Communication Disorders: PR: SPE 261, 364, COM 320, 321. Lectures, readings, observations and participation in the evaluative procedures concerned with speech and language skills of the handicapped.
- COM 400** **4 (4,0)**
Opinion and the Mass Media: Role of the mass media in influencing public opinion; techniques of opinion measurement, and impact of opinion polls on voters.
- COM 401** **4 (4,0)**
Communicative Disorders: Articulation: PR: SPE 261, 364, COM 320, PSY 301. Survey of articulation disorders and their management. Observations required.
- COM 402** **4 (4,0) F**
Communicative Disorders: Language: PR: SPE 261, 364, COM 320. Survey of language disorders and their management. Observations required.
- COM 403** **4 (4,0) W**
Communicative Disorders: Voice: PR: SPE 261, 364, COM 320 and PSY 301. Survey of voice disorders and their management. Observations required.
- COM 404** **4 (4,0)**
Communicative Disorders: Stuttering: PR: SPE 261, 364, COM 320 and PSY 301. Survey of rhythm disorders and their management. Observations required.

- COM 405** 4 (4,0)
Clinical Methods in Communicative Disorders: PR: SPE 261, 364, COM 320, 321. An analysis of techniques and methods of planning and executing therapeutic programs for communicatively handicapped individuals.
- COM 406** 5 (5,0)
Basic Instrumentation for Communicative Disorders: PR: C.I. Calibration and instrumentation for communicative sciences. Basics of circuitry as well as operation and minor repairs of audiological and speech pathology.
- COM 410** 4 (4,0) F,S
Social Responsibilities of the Mass Media: Relationships between the mass media and society; examination of social and ethical responsibilities of the media.
- COM 411** 4 (4,0) F,W
Legal Responsibilities of the Mass Media: Legal rights and restrictions, including Constitutional guarantees, libel, invasion of privacy, and contempt of court.
- COM 414** 4 (4,0) W
Mass Communication and Government: Role, responsibilities, and non-legal problems of both the government and press in the process of conveying governmental news to the public.
- COM 415** 4 (4,0)
Informational Communication: An examination of available communication systems (non-technical) and their utilization within business, educational, entertainment, industrial, medical, and military organization.
- COM 420** 1 (1,1) W
Practicum in Communication: PR: C.I. May be repeated three times for credit.
- COM 421** 2 (2,0)
Current Affairs Analysis: An analytical approach to the handling of the major news events through mass communications, with emphasis on their social, economic, political, cultural and historical impact.
- COM 429** 4 (4,0)
Mass Media and Popular Culture: An impact study of mass media upon American culture past to present.
- COM 440** 1-12 (0,1-12) F,W,S,Su
Clinical Observation and Practice: PR: C.I. Observation and supervised participation in speech pathology and audiology in the university clinic and local clinics.
- COM 444** 4 (4,0)
Speech Science: PR: C.I. A comprehensive study of the physics of sound as related to the vocal mechanism including the use of instrumentation in voice analysis.
- COM 445** 4 (4,2) S
Basic Audiology: PR: SPE 261, 364, COM 320. Introduction to physics of sound, anatomy of hearing mechanism, pure tone audiometry, hearing aids, problems of the hearing handicapped. Observation and practice required.
- COM 450** 4 (4,0)
Aural Habilitation: PR: COM 445. Principles and procedures in the utilization of residual hearing, auditory training, speech reading and the use of hearing aids.
- COM 451** 5 (5,0)
Speech and Language for the Deaf and Hard of Hearing: PR: C.I. Principles of language and speech development in pre-school and school-age hard-of-hearing and deaf children.

- COM 457** **1-15 (0,1-15) F,W,S,Su**
Communication Internship: PR: C.I. Internship in radio, television, film, journalism, public relations, advertising and speech involving practicum at selected communications organizations for one quarter.
- COM 460** **4 (4,0)**
Group Dynamics: A study of human behavior in group situations.
- COM 461** **4 (4,0) F,S**
Nonverbal Communication: Review of current behavioral research in such areas as proxemics, kinesics, physical characteristics, tactile communication and paralanguage. Lectures are supplemented by frequent nonverbal exercises.
- COM 462** **4 (4,0) S**
Attitudes and Communication: A survey of the immediate and direct ways in which persuasive communications and social groups come to influence attitudes.
- COM 463** **4 (4,0) W**
Studies in Listening: Analysis of current trends, professional literature, and resource materials bearing upon the teaching of listening. Practice in listening; preparing listening experiences; oral and written reports.
- COM 472** **(4,0)**
Rhetoric of Social and Political Action: PR: Junior Standing. A critical investigation of social and political speaking within contemporary American society including agitative rhetoric of political dissent.
- COM 501** **4 (4,0) F**
Speech Communication Instruction: PR: C.I. Communication models as teaching devices, design of communication curricula, instructional media with speech practicum and classroom criticism and evaluation.
- COM 507** **4 (4,0)**
Freelance Writing: PR: Evidence of satisfactory writing skills. A study of the techniques and procedures of freelance writing, including the preparation of several manuscripts.
- COM 510** **4 (4,0)**
Survey of Communicative Disorders: A survey of speech, language and hearing disorders for habilitative personnel and other interested professionals.
- COM 511** **5 (5,0)**
Communicative Disorders Programs for the Public Schools: PR: C.I. Methods and techniques for the public school clinician; including organization of public school programs. Observations required.
- COM 512** **4 (4,0) W**
Audiology: PR: C.I. Advanced techniques in pure-tone speech, and automatic audiometry, with emphasis on interpretation of audiograms and differential diagnosis. Practice required.
- COM 513** **4 (4,0)**
Auditory Problems of Infants and Children: PR: C.I. Development of sensory perception, auditory deprivation tests, and testing techniques with the neonate, infant, and young child.
- COM 514** **4 (4,0)**
Hearing Conservation: PR: C.I. Information regarding the prevention of hearing loss and the establishing of hearing conservation programs.
- COM 520** **4 (4,2) S**
Psycholinguistics: Foundations of language in affective consciousness and the human nervous system. Pragmatic analysis of word meaning and its precise scientific measurement. Implications for Communicative Disorders.
- COM 568** **5 (4,0) W**
Evolution of Communication Theory: General Survey: Major communication

trends from classical era to the present. Comparison of Aristotelian and non-Aristotelian rhetorics. Contributions of principal figures will be discussed.

COM 602 **4 (4,0) F**

Modern Communication Theory: Comparative analysis of theories and models of human communication: behavioral systems, encoding and decoding processes, interaction variables, and social context.

COM 603 **4 (4,0) W**

Information and Educational Systems: PR: C.I. Sources, processing and transmittal of educational and informational materials (software) used in educational broadcast systems, information retrieval systems, learning machines, etc.

COM 605 **1-15 (0,1-15)**

Clinical Practice in Language and Speech Pathology: PR: COM 405 and C.I. Advanced clinical practice in diagnosis and treatment of communicative disorders. May be repeated with change of content, not to exceed a total of 15 hours.

COM 612 **4 (4,0) W**

Comparative International Communication Organizations: A study of the principal mass communication organizations of the world.

COM 613 **4 (4,0)**

Communication and Society: The importance of communications in societal stress situations, with emphasis on current problems.

COM 617 **4 (4,0)**

Governmental Public Relations: PR: C.I. Emphasis study of campaign planning, image and public affairs activities of political aspirants and executive governmental offices at the city, county, state and federal levels.

COM 620 **4 (4,0)**

Studies in Persuasion: Survey and evaluation of experimental research in persuasion.

COM 621 **4 (4,0)**

Persuasion in the Media: Study of persuasive campaign with focus upon ethics, methodology, and strategies toward accomplishing the communication end.

COM 622 **4 (4,0) W**

Small Group Communication: PR: C.J. A study of communication and its effect on small group behavior.

COM 625 **4 (4,0)**

Problems in Broadcast Journalism: PR: C.I. Analysis of electronic journalistic policies, sources and control of information.

COM 628 **4 (4,0)**

Audience Measurement: PR: C.I. Examination and review of audience measurement techniques. Individual assignments for compilation and analysis of measurement data.

COM 630 **4 (4,0)**

Communications Management: PR: C.I. Analysis and developments, with reference to particular media. Organizational theory, structure and behavior. Management principles and operations.

COM 635 **4 (4,0) W**

Legal Aspects of Mass Communication Law: PR: C.I. Further study into the legal rights and restrictions affecting the mass media.

COM 640 **4 (4,0) W**

Effects of Advertising on Society: An in-depth study of advertising's effects on consumer behavior, societal mores and media economics.

COM 645 **3 (3,0)**

Speech of the Laryngectomee: PR: C.I. Basic principles and practice for developing and improving the speech of the laryngectomee.

- COM 646** 4 (4,0)
Aphasia: PR: C.I. Etiology, diagnostic techniques and management of the adult aphasic patient.
- COM 647** 4 (4,0)
Auditory Amplification: Physical characteristics and clinical aspects of auditory amplifiers for the hearing handicapped. Clinical observations required.
- COM 649** 4 (4,0)
Industrial Audiology: PR: C.I. A study of the problems of noise pollution in the community. Emphasis is placed upon psychological and physiological problems associated with noise. Noise studies performed.
- COM 660** 4 (4,0) W
Advanced Studies in Communicative Disorders: Articulation: Specific diagnostic techniques and therapeutic procedures for articulation disorders.

COMPUTER SCIENCE

- COMP 101** 4 (4,0) F,W,S
Introduction to Computer Science: History, typical computer; elements and symbology; number systems; arithmetic operations; control and data flow; peripheral components; memory devices; case study of an application of computers.
- COMP 102** 3 (3,0) F,W,S
Computer Programming: PR: MATH 110 or the equivalent. Problem definitions, algorithms, flow charts, digital computer programming using a higher level language (FORTRAN).
- COMP 205** 3 (3,0) F,W,S
Algorithmic Processes I: PR: MATH 110 or equivalent. Use of computers, problem solving, algorithms, computer organization, assignment statements, data types, input/output, program logic, looping, arrays, selected projects.
- COMP 206** 3 (3,0)
Algorithmic Processes II: PR: COMP 205. Computing systems, procedures, storage allocation, parameter access, recursion, debugging techniques, selected projects.
- COMP 301** 3 (3,0)
Computing Processes: PR: At least one programming course. An accelerated course in algorithmic and computing concepts for the student with significant knowledge of at least one programming language. Credit may not be earned in both COMP 301 and the COMP 205, 206 sequence.
- COMP 302** 3 (3,0)
Programming and Numerical Methods: CR: MATH 322. Problem definitions, algorithms, flow charts, digital computer programming using FORTRAN for numerical applications.
- COMP 303** 3 (3,0) F,W,S
Computer Fundamentals for Business Applications I: History of computers; processing information; manual information processing systems; introduction to electronic computer systems; storage of information; solving problems; preparation of common business reports.
- COMP 304** 3 (3,0)
Computer Fundamentals for Business Applications II: PR: COMP 303 or equivalent. Introduction to business systems, business parameters, information flow, business data processing terminology, program creation, documentation, and operations orientation.
- COMP 305** 4 (4,0)
Assembly Language Programming Laboratory: PR: COMP 206 or COMP 301 or COMP 302. Computer structure and assembly language.
- COMP 306** 4 (4,0)
Computers and Programming: PR: COMP 305 and COMP 307. Computer

systems organization, micro-programming, symbolic assembly systems, macros, program segmentation and linkage, systems and utility programs, selected projects using a mini-computer.

COMP 307

3 (3,0)

Algorithmic Processes III: PR: COMP 206 or COMP 301. Strings, lists, trees, graphs, files, job control language, numeric and non-numeric applications, selected projects.

COMP 311

3 (3,0)

Analysis of Computer Systems and Hardware Capabilities: PR: COMP 304. Characteristics of computers and related equipment from business usage standpoint. Techniques of measuring hardware and system performance, benchmarking, task mix parameters, simulation and configuration analysis.

COMP 331

4 (4,0)

Discrete Structures in Computer Science: PR: COMP 307 and a course in statistics. Recursion; algorithms for listing permutations, combinations, samples, and selections; Markov algorithms; theory of directed and undirected graphs; applications to computer science.

COMP 340

3 (3,0)

Data Structures and Operating Systems for Business: PR: COMP 304. Examination of data set structures and relations to file activity. Operating system services, multiprogramming, accounting, background-foreground processing, overhead cost analysis.

COMP 361

4 (4,0)

Numerical Calculus: PR: COMP 206 and MATH 324. Numerical solution of algebraic and transcendental equations, systems of equations, ordinary differential equations, FORTRAN.

COMP 387

3 (3,0)

Computer Programming with Business Applications: PR: Any COMP Course. COBOL programming, data processing applications.

COMP 388

3 (3,0)

Advanced COBOL: PR: COMP 387. Processing of sequential, indexed and random files, advanced topics and laboratory projects.

COMP 401

4 (4,0)

Computer Organization I: PR: COMP 306, EECS 311. Processor characteristics, peripheral equipment characteristics, information representation, introduction to data communications.

COMP 405

4 (4,0)

Data Structures: PR: COMP 305 and COMP 307. Basic concepts of data; linear lists, strings, arrays, and orthogonal lists; ordering or sorting techniques; recursion; string and list processing languages.

COMP 408

4 (4,0)

Programming Languages I: PR: COMP 307. Formal definitions of programming languages, global properties of algorithmic languages.

COMP 411

4 (4,0)

Systems Programming I: PR: COMP 306 and COMP 405. Task scheduling, file management, file security, multi-programming, communication between system components, system logs and accounting and status reporting.

COMP 481

4 (4,0)

Computer Processing of Statistical Data: PR: STAT 402 and knowledge of FORTRAN, or C.I. Use of computers in statistical analysis; error analysis; Monte Carlo calculations; simulation; matrix calculations; regression; non-linear estimation; principal components; factor analysis; analysis of variance/covariance.

COMP 484

3 (3,0) W

Health Information Systems: PR: COMP 303. Survey of the current health information systems, application of automated data processing techniques to the health field, manual systems needed to support them.

- COMP 487** **3 (3,0)**
Computer Processing of Business Data I: PR: Junior standing and COMP 303. Computers in business data processing; applications in accounting, payroll, inventory control, and production control; file organization, development, and control; on-line systems and controls.
- COMP 488** **3 (3,0)**
Computer Processing of Business Data II: PR: COMP 487. Continuation of COMP 487.
- COMP 489** **3 (3,0)**
Computer Processing of Business Data III: PR: COMP 488. Continuation of COMP 488.
- COMP 501** **3 (3,0)**
Digital Computing: MATH 323. Digital computer programming; internal operation of the computer; current developments in programming languages and computers. Intended for secondary school mathematics teachers.
- COMP 503** **4 (4,0)**
Hardware Concepts: PR: COMP 511 or equivalent. Storage organization and searching, logic, data-flow, computer architecture.
- COMP 505** **4 (4,0)**
Algorithmic Concepts: PR: Acceptance into a graduate program. Computer organization, flow-charts, computing systems, errors, data structures, selected projects using PL/1.
- COMP 508** **4 (4,0)**
Programming Languages II: PR: COMP 408. List Processing, string manipulation, data description, and simulation languages.
- COMP 511** **4 (4,0)**
Software Concepts: PR: COMP 505 or equivalent. Machine and assembly language, micro-programming, systems and utility programs, data structures.
- COMP 521** **3 (3,0)**
Compiler Structure I: PR: COMP 405 and COMP 408. Syntax analysis; bootstrapping and metacompilers; languages for compiler writing, storage allocation, mapping, dynamic allocation; scanners; symbol tables; code emitters; one-pass and multi-pass systems; code optimization.
- COMP 522** **3 (3,0)**
Compiler Structure II: PR: COMP 521. Continuation of COMP 521.
- COMP 561** **4 (4,0)**
Numerical Analysis I: PR: COMP 361 and MATH 317. Fixed-point interaction, matrix computations, interpolation, error analysis, differentiation and integration, solution of systems of ordinary differential equations.
- COMP 565** **4 (4,0)**
Scientific Applications Concepts: PR: COMP 505 or the equivalent; and MATH 324. Use of computers in science and engineering, techniques and applications.
- COMP 585** **4 (4,0)**
Commercial applications Concepts: PR: Acceptance in a graduate program. Automated business systems and their definition.
- COMP 601** **4 (4,0)**
Computer Organization II: PR: COMP 503 or the equivalent. Computer system design problems, memory utilization, storage management, addressing, control and input-output, specific examples of computer architecture, array computers, variable structure computers.
- COMP 602** **4 (4,0)**
Computer Organization III: PR: COMP 601. Continuation of COMP 601.
- COMP 605** **3 (3,0)**
Economics of Computers: PR: COMP 585 and a course in microeconomics;

or C.I. The computer industry, terms and conditions of sale and rental, cost and effectiveness of computer systems, pricing computer services.

COMP 607 **3 (3,0)**
Philosophy of Programming: PR: 8 hours of programming. Program organization, structured programming and allied topics, case studies and projects.

COMP 611 **4 (4,0)**
Systems Programming II: PR: COMP 503 and 511; or equivalent. Batch process systems, parallel processing, multiprogramming and multiprocessing, user services and facilities.

COMP 612 **4 (4,0)**
Systems Programming III: PR: COMP 611. Continuation of COMP 611.

COMP 615 **3 (3,0)**
Simulation of Computer Systems: PR: COMP 511 or equivalent; and IEMS 620. Application of system methodology to hardware and software systems.

COMP 617 **4 (4,0)**
Information Organization and Retrieval: PR: COMP 511 or the equivalent. Models for structured information, analysis of information content, automatic retrieval systems, evaluation of retrieval effectiveness.

COMP 618 **3 (3,0)**
Computer Graphics Systems: PR: COMP 511. Systems software and data structures for graphics devices and display processors.

COMP 651 **3 (3,0)**
File Systems: PR: COMP 601 and COMP 611. Functions of file systems, file system organization and structure, analysis of file systems, data management systems.

COMP 653 **3 (3,0)**
Computer-Based Communications Network: PR: COMP 585 or the equivalent. Functions of communications systems, communication system hardware, communication system organization and structure, examples.

COMP 655 **3 (3,0)**
Information Analysis: PR: COMP 585 or the equivalent. Determination of information requirements and alternatives, basic tools.

COMP 656 **3(3,0)**
Information System Design: PR: COMP 655. Tools and objectives, hardware/software selection and evaluation, data base development, program development, system implementation, post implementation and analysis. This course emphasizes the distributed processing approach.

COMP 661 **4 (4,0)**
Numerical Analysis II: PR: COMP 561. Mathematical stability and ill-conditioning, discretization error, convergence of iterative methods, rounding error.

COMP 681 **3 (3,0)**
Managing the Computer Professional: PR: COMP 585 and MGMT 501; or C.I. The programming group, team and project tasks, personality factors, motivating, training, experience.

COOPERATIVE EDUCATION

COED 100 **0***
 Cooperative Education, Freshman Year

COED 200 **0***
 Cooperative Education, Sophomore Year

COED 300 **0***
 Cooperative Education, Junior Year

COED 400 **0***
 Cooperative Education, Senior Year

*May be repeated

CRIMINAL JUSTICE

- CRJ 201** **4 (4,0) F,S,Su**
Law Enforcement: A comprehensive survey of the history and philosophy of law enforcement. The role of the police in the system of criminal justice will be emphasized.
- CRJ 207** **4 (4,0)**
Criminal Investigation: A comprehensive survey of the modern methods and procedures used in the investigation and solution of criminal offenses.
- CRJ 300** **4 (4,0) F, Su**
Crime in America: A survey of crime and criminality in the United States with emphasis on crime data and its weaknesses, theories of causation, and types of criminal behavior.
- CRJ 301** **4 (4,0) F,S**
Criminal Law in Action: Basic concepts of criminal law, their origin and development; constitutional and procedural rules; and Federal and State relations in the administration of justice.
- CRJ 302** **4 (4,0) F,W,S**
Administration of Justice: The broad system of criminal justice in America, and examination of various goals and conflicts present within law enforcement, court and corrections subsystems.
- CRJ 303** **4 (4,0) W**
Municipal Police Administration: PR: CRJ 201. Advanced study of contemporary operational concepts of administration with an emphasis on function, rather than structure.
- CRJ 304** **4 (4,0) F**
The Police Managers: PR: C.I. Elements of first-line supervision and executive development. Administrative leadership; its situational nature; methods and traits; recent theories and research on leadership.
- CRJ 305** **4 (4,0)**
Justice of Manpower for Science and Technology: Study of both operational management concepts of various related investigative technological and scientific professions, and the relationship between justice programs and criminal events.
- CRJ 310** **4 (4,0) F,W,S**
The Correctional and Penal Systems: Theories, structures and methods of institutions and noninstitutional services in the correctional rehabilitation of criminal and juvenile offenders.
- CRJ 311** **4 (4,0) F**
Probation and Parole: Analysis of probation and parole services and systems: the organization, administration and management of treatment and field services for various types of public offenders.
- CRJ 400** **4 (4,0) F**
Police and the Community: Police relationships with citizenry. Ethnic and social conflict in relation to law enforcement, and how police deal with groups, crowds, gangs and nonconformist cultures.
- CRJ 407** **4 (4,0) W**
Comparative Justice Systems: A survey of contemporary foreign criminal justice systems, operational and philosophical differences emerging from various cultural and legal systems.
- CRJ 410** **4 (4,0) S**
Financial Administration and Budgeting: PR: C.I. Police budgets as instruments of policy making and management. Financial, fiscal, administrative and legal aspects of budgeting.
- CRJ 411** **4 (4,0) Su**
Justice Policy and Social Conflict: The effects of social conflicts and political

decisions upon the administration of justice, especially the role assigned law enforcement in dealing with social problems.

CRJ 422

4 (4,0) W

Delinquency Control: Examination of programs and institutions including juvenile court process, intake services, juvenile bureau administration, youth authority programs and drug abuse control.

CRJ 423

4 (4,0) S

Corrections Administration: Organization, administration and operation of short and long term detention facilities or institutions including classification, treatment, security, supervision and prison sub-culture problems.

E

ECONOMICS

ECON 201

3 (3,0) F,W,S,Su

Fundamentals of Economics: An introductory course designed to provide the nonbusiness student with a terminal course in the fundamentals of economics. Not open to business majors.

ECON 202

4 (4,0) F,W,S,Su

Principles of Microeconomics: The determination of prices in a market economy; their role in allocating consumer and producer goods and in distributing incomes. Efficiency of markets and evaluation of public policies designed to improve efficiency.

ECON 203

4 (4,0) F,W,S,Su

Principles of Macroeconomics: PR: ECON 202. A study of national income accounting, income and employment theory, business fluctuations, money and banking, and monetary and fiscal policy in the U.S. economy.

ECON 301

4 (4,0) F,W,S,Su

Intermediate Price Theory: PR: ECON 203. Theoretical analysis of the determination of product and factor prices under different market structures.

ECON 307

4 (4,0) F,W,S,Su

American Economic History: An introduction to the economic development of the United States with emphasis upon agriculture, labor, industrialization, transportation, and banking. (Same as HIST 311).

ECON 311

4 (4,0) F,W,S,Su

Intermediate Money, Income and Employment Theory: PR: ECON 203. Theoretical analysis of the determination of national income and employment, including an examination of the monetary system.

ECON 321

4 (4,0) F,W,S,Su

Quantitative Methods and Business Decision Analysis: PR: STAT 301. The use of statistical methods as scientific tools in the analysis of economics and business problems to aid in the process of decision making.

ECON 328

3 (3,0)

Transportation Economics: PR: 203. Economic characteristics and governmental regulation of public carriers. Consideration of competitive relations between modes of transportation and criteria for public investment in transportation and criteria for public investment in transportation systems.

ECON 331

3 (3,0)

Economics of Labor: PR: ECON 203. A survey of the growth, structure, objectives, and collective bargaining practices of organized labor groups.

ECON 332

3 (3,0)

Manpower and Human Resources: PR: ECON 203. Examines labor as a human resource or human capital. Special emphasis placed upon the changing role of manpower and manpower policies.

- ECON 341** **3 (3,0)**
International Economics: PR: ECON 203. Fundamental principles of international trade and foreign exchange, including the balance of payments and problems of foreign economic policy.
- ECON 381** **3 (3,0)**
Economics of Public Utilities: PR: ACCY 211 and ACCY 212 or ACCY 300, and ECON 203 or C.I. The nature of public utilities, the economics of rate determination, and regulatory policy.
- ECON 401** **3 (3,0)**
Managerial Economics: PR: ECON 203 and ECON 321. The uses of economic analysis in economic decision-making and business policy formulation.
- ECON 411** **3 (3,0)**
Comparative Economic Systems: PR: ECON 203. An analysis of the fundamental institutions of the American economic system and a comparison of the American economic system with other economic systems.
- ECON 421** **3 (3,0)**
Economic Statistical Analysis: PR: ECON 321. Concepts and methods of developing, analyzing and interpreting measures of economic activity, and business and economic change.
- ECON 431** **3 (3,0) F,W,S, Su**
Public Finance in the American Economy: PR: ECON 203. Analysis of fiscal institutions and decision-making in the public sector of the American economy; budget planning and execution, taxation, debt; and theory of taxes.
- ECON 435** **3 (3,0)**
Monetary Theory and Policy: PR: FIN 331. A study of the factors that influence the supply of and demand for money and credit, and the effect of changes in these factors on the allocation of resources, levels of national income, employment, and prices.
- ECON 441** **3 (3,0)**
Economic Development: PR: ECON 203. The processes and problems of economic development.
- ECON 461** **3 (3,0)**
Business and Government: PR: ECON 203. A survey of the most significant public policies affecting business firms.
- ECON 471** **3 (3,0)**
History of Economic Thought: PR: ECON 203. A study of the leading ideas of the major contributors to the development of economic thought.
- ECON 501** **4 (4,0)**
Economic Concepts: PR: Acceptance into the graduate program. Introduction to economic analysis, including the theory of the market; supply, demand and price determination; income distribution; aggregate income and employment determination.
- ECON 521** **4 (4,0) W,S**
Statistics for Business and Economics: PR: Acceptance into the graduate program. Statistical theory and problems relating to business and economics including time series and correlation theory, index number theory and statistical inference.
- ECON 523** **3 (3,0)**
Econometric Methods: PR: Graduate standing and ECON 321 or equivalent. The application of econometric methods to economic theory and problems. Emphasis is placed on the validation of a model.
- ECON 525** **3 (3,0)**
Mathematical Economics: PR: ECON 203 and MATH 223. An introduction to the mathematical tools of modern economic analysis.
- ECON 551** **3 (3,0)**
Economics of Urban Areas: PR: ECON 203. An analysis of the economic

problems arising from and associated with the growth of cities and suburban areas within metropolitan districts.

ECON 601 3 (3,0)

Economic Analysis of the Firm: PR: Graduate Standing and ECON 501 or equivalent. Commodity price and output determination; factor price determination and functional income distribution; analysis of different types of markets.

ECON 602 5 (5,0)

Price Theory: PR: Graduate standing and ECON 301 or equivalent. An analysis of the theory of consumer choice, the theory of the firm, and the theory of distribution.

ECON 611 3 (3,0)

Aggregate Economics-Income, Unemployment and Growth: PR: Graduate standing and ECON 501 or equivalent. Macroeconomic measurement, theory and policy, designed specifically for the student who possesses a limited grasp of economic analysis.

ECON 612 5 (5,0)

Macroeconomic Theory: PR: Graduate standing and ECON 311 or equivalent. An analysis of the nature and determinants of aggregate output, employment, income, and spending with specific emphasis on the achievement of economic stability.

ECON 621 3 (3,0)

Statistical Models for Business: PR: Graduate Standing and ECON 521 or equivalent. The theory of model analysis including the validation of model assumptions through Monte Carlo analysis and advanced statistical techniques.

ECON 622 5 (5,0)

Statistical Analysis of Economic Data: PR: Graduate standing and ECON 321 or equivalent. A study of the concepts and methods of developing, analyzing, and interpreting measures of economic activity.

ECON 631 3 (3,0)

Public Finance and Financial Policy: PR: Graduate Standing and ECON 501 or equivalent. Analysis of the fiscal role and instruments of government and their effects on the economy; taxation, debt, and fiscal policy.

ECON 635 3 (3,0)

Money, Banking and Economic Activity: PR: Graduate Standing. A study of the institutions in which the money supply is generated and the influence of monetary policy on economic stability and growth.

ECON 636 3 (3,0)

Monetary Theory and Policy: PR: Graduate standing and a course in Money and Banking. An analysis of the fundamental theory underlying the supply of money, demand for money and effects of monetary variables on the level of economic activity.

ECON 641 3 (3,0)

Theory of International Finance and Monetary Institutions: PR: Graduate standing. Analysis of the international money market, international equilibrium and adjustment mechanism, exchange rate variations, balance of payments, capital flows, and effects of international monetary policies.

ECON 642 3 (3,0)

International Trade: PR: Graduate standing. An inquiry into the theory of international trade, commercial policy and economic integration.

ECON 645 3 (3,0)

Economic Development: PR: Graduate standing. Analysis of theories and problems of growth and development with special attention to resource scarcity, population growth, and interaction of foreign trade and internal development.

ECON 647 3 (3,0)

The Economics of Central Planning: PR: Graduate standing. An analysis of

the economics of planning as applied to the economy of the Soviet Union and Soviet type centrally planned economic systems.

ECON 655 **3 (3,0)**

Environmental Economic Analysis: PR: Graduate standing. An investigation of environmental problems, methods of economic analysis, policies of environmental protection and difficulties in making quantitative assessments of environmental damages.

ECON 661 **3 (3,0)**

Labor Economics: PR: Graduate Standing and ECON 501 or equivalent. An investigation into the nature and function of the labor markets, with specific concern for both institutional and non-institutional imbalance.

ECON 671 **3 (3,0)**

History of Economic Thought: PR: Graduate standing. The history and development of Pre-Keynesian economic doctrines with emphasis on classical and post-classical economic thought.

ECON 681 **3 (3,0)**

The Economics of Regulated Industries: PR: Graduate standing. Economic, legal, and administrative concepts of regulation with emphasis on goals, tasks, phases, and procedures of regulation pertaining to transportation, electric, gas, and communications systems.

ECON 683 **3 (3,0)**

Industrial Organization and Performance: PR: Graduate standing. A study of the performance of industries representative of various types of market structures and practices, relative to price and efficiency.

EDUCATION, ADMINISTRATION AND SUPERVISION

EDAD 601 **5 (5,0)**

Organization and Administration of Schools: PR: Rank III Certificate or C.I. School organizational patterns kindergarten through junior college. Study of functions such as scheduling, staffing, community relations, design and operation of facilities, financial management.

EDAD 602 **5 (5,0)**

Organization and Administration of Instructional Programs: PR: Rank III Certificate or C.I. Purpose and functions of school learning centers, curricula, media, and establishment of educational priorities; review and analysis of various grouping patterns for individualizing instruction.

EDAD 603 **4 (4,0)**

Legal Aspects of School Operation: PR: Rank III Certificate or C.I. Study of state and federal laws affecting the operation of public schools emphasizing individual rights and responsibilities of students, faculty, and administrators.

EDAD 611 **4 (4,0)**

Educational Supervisory Functions: PR: Rank III Certificate or C.I. Analysis of school supervisory functions in human relations, leadership, personnel administration, and in-service education for instructional improvement.

EDAD 612 **5 (5,0)**

Educational Supervisory Techniques: PR: Rank III Certificate and EDAD 611. Development of techniques in observation, group processes, communication, and evaluation for assessment of school personnel and programs.

BUSINESS EDUCATION — DEVELOPMENTAL

EDBE 101 **3 (3,1) F,W,S**

Introductory Typewriting: For the student with no previous instruction in typewriting. Development of basic elements in using the typewriter as a tool of literacy and communications.

- EDBE 102** **3 (3,1) F,W,S**
Typewriting Production I: PR: EDBE 101 or equivalent. Continuation of development of skills in speed and accuracy and introduction to skill building procedures in communications production.
- EDBE 103** **3 (3,1) F,W,S**
Typewriting Production II: PR: EDBE 102 or equivalent. Expansion of communications production development, speed and accuracy.
- EDBE 201** **3 (3,1)**
Principles of Shorthand I: PR: Concurrent enrollment in EDBE 101 or equivalent. For students with no previous instruction in shorthand. Introduction to basic theory of Gregg Shorthand, vocabulary development, and speed building.
- EDBE 202** **3 (3,1)**
Principles of Shorthand II: PR: EDBE 102 and EDBE 201 or equivalents. A continuation in the study of shorthand theory, vocabulary development, and speed building.
- EDBE 203** **3 (3,1)**
Principles of Shorthand III: PR: EDBE 102 and EDBE 202 or equivalents. Development and refinement of sustained shorthand dictation, speed, and vocabulary.
- EDBE 301** **3 (3,1)**
Shorthand Dictation: PR: EDBE 102 and EDBE 203 or equivalents. Continued development of shorthand dictation and introductory communications production.
- EDBE 302** **3 (3,1)**
Shorthand Transcriptions: PR: EDBE 102 and EDBE 301. Gregg Shorthand dictation and refinement of communications production.
- EDBE 305** **3 (3,1)**
Office Technology: PR: EDBE 102 or C. I. Basic operation and function of technological media in modern business offices.
- EDBE 406** **3 (3,0)**
Office Systems and Procedures: PR: EDBE 302. Study of the responsibilities of the executive secretary and office supervisor; records management, travel services, case studies in human relations in executive level job performance.
- EDBE 601** **3 (3,0)**
Curriculum Innovations in Business Education: PR: Rank III Certificate or C.I. A critical analysis of the business curricula in post secondary schools; development of philosophy, objectives and design of innovative programs in business.
- EDBE 602** **3 (3,0)**
Problems, Issues, and Trends in Business Education: PR: Rank III Certificate or C.I. Historical development; fundamentals of business education; its relation to business, vocational and general education, guidance, objectives and contemporary problems.
- EDBE 603** **3 (3,0)**
Analysis, Trends and Research in Typewriting Instruction: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 604** **3 (3,0)**
Evaluation in Business Education: Rank III Certificate or C.I. A study of standardized and prognostic business education tests; functions, construction, administration, and evaluation of measurement instruments.
- EDBE 610** **3 (3,0)**
Administration and Supervision of Business Education: PR: Rank III Certificate or C.I. Organization, administration, and supervision of Business Education.

- EDBE 611** **3 (3,0)**
Analysis of Instruction in Shorthand and Transcription: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 612** **3 (3,0)**
Analysis of Instruction in Office Technology: PR: Rank III Certificate or C.I. Techniques, materials and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 613** **3 (3,0)**
Analysis of Instruction in Basic Business and Accounting: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to a study of research and new trends of instruction.
- EDBE 614** **3 (3,0)**
Coordination of Cooperative Office Business Education: PR: Rank III Certificate or C.I. A study of cooperative programs; organization and cooperative business education programs.
- EDBE 615** **3 (3,0)**
Improvement of Related Instruction in Cooperative Business Education: PR: Rank III Certificate or C.I. Techniques, materials, and instructional media; psychological principles, evaluation, and special attention to the study of research and new trends of instruction in related cooperative education study.

ELEMENTARY EDUCATION — DEVELOPMENTAL

- EDEL 301** **3 (2,1) F,W,S**
Teaching Mathematics in the Elementary School: PR: Admission to Phase II or C.I. Consideration of selected concepts; organizing for instruction, techniques and activities; class and individual diagnosis; remedial procedures.
- EDEL 302** **3 (2,1) F,W,S**
Mathematics Programs in the Elementary School: PR: EDEL 301. Analysis of teaching arithmetic, geometry and measurement; philosophy and objectives; instructional materials; current research and new curricula.
- EDEL 306** **4 (2,2) F,W,S,Su**
Music in the Elementary School: Fundamental procedures for teaching elementary school music, stressing appropriate music materials and activities for different age groups; selected experiences in music.
- EDEL 307** **4 (4,0) F,W,S,Su**
Literature for Children: PR: Admission to Phase II or C.I. General survey of books and materials; criteria for analysis and evaluation; types of books available considered in terms of interests, needs, and abilities of children.
- EDEL 311** **3 (3,0) F,W,S**
Basic Foundations of Reading: PR: Admission to Phase II or C.I. Introduction to reading; principles, procedures and organization, current practices; analysis of reading materials; correlation with child development; investigation of research.
- EDEL 312** **3 (3,0) F,W,S**
Reading in the Elementary School: PR: EDEL 311. Study of specific techniques and materials used to develop reading comprehension vocabulary and rate; organizing and directing a reading lesson; individual differences; evaluation procedures.
- EDEL 315** **3 (3,0) F,W,S**
Teaching Science in the Elementary School: PR: Admission to Phase II or C.I. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.

- EDEL 316** **3 (3,0) F,W,S**
Elementary School Curriculum: PR: Admission to Phase III or C.I. Basic scope and sequence of the elementary school curriculum; philosophical concepts; techniques and materials for instruction; patterns of organization; planning for instruction.
- EDEL 317** **3 (3,0) F,W,S**
Teaching Social Science in the Elementary School: PR: Admission to Phase II or C.I. Consideration of selected themes, problems, and concepts; organizing for instruction; techniques and activities; evaluation procedures.
- EDEL 318** **3 (3,0) F,W,S**
Teaching Physical Education in the Elementary School: PR: EDTA 206 and EDTA 307. Organization, practice, and conduct of elementary school physical education with emphasis on teaching methods.
- EDEL 405** **4 (4,0) F,W,S,Su**
Language Arts in the Elementary School: PR: Admission to Phase II or C.I. Content, principles, materials and techniques involved in teaching speaking, listening, writing, and spelling in the elementary school; organizing for instruction.
- EDEL 406** **4 (2,2) F,W,S,Su**
Art in the Elementary School: Basic principles, purposes, scope and sequence; organization for instruction; evaluation of activities; selected art experiences.
- EDEL 407** **3 (3,0) F,W,S,Su**
Classroom Diagnosis and Treatment of Reading Difficulties: PR: EDEL 311 or EDEL 312 or equivalent. Principles and techniques of diagnosis and remedial teaching with the disabled reader; factors related to reading problems — physiological, psychological, cultural; materials for instruction.
- EDEL 408** **3 (2,1) F,W,S,Su**
Science Programs in the Elementary School: PR: Admission to Phase II or C.I. Overview of the instructional program in natural sciences; philosophy and objectives; special problems; instructional materials; current research and new curricula.
- EDEL 409** **3 (3,0) F,W,S,Su**
Social Science Programs in the Elementary School: PR: Admission to Phase II or C.I. Overview of the instructional program in the social sciences; philosophy and objectives; special problems; instructional materials; current research and new curricula.
- EDEL 415** **3 (2,1) F,W,S,Su**
Teaching Elementary School Health and Physical Education: PR: Admission to Phase II or C.I. Observation, organization, practice, and conduct of health and physical education activities in the elementary school.
- EDEL 460** **4 (4,0) F**
Principles and Programming in Early Childhood Education: PR: C.I. Consideration of basic concepts, goals and principles underlying program planning; trends in research and development. Concurrent laboratory experiences.
- EDEL 461** **4 (4,0) W**
Curriculum in Early Childhood Education: PR: C.I. Exploration of early childhood curriculum; organizing for instruction; selection of appropriate objectives and activities in developing a balanced program. Concurrent laboratory experiences.
- EDEL 462** **4 (4,0) S**
Creativity in Nursery-Kindergarten Education: PR: C.I. Emphasizes using art and music activities in the early childhood education program to stimulate and develop individual creativity.
- EDEL 482** **3 (3,0) F,W,S,Su**
Drug Abuse Education: PR: C.I. Study of developments relating to drug abuse

in contemporary society. Objectives, content, resources, and techniques of drug abuse education.

EDEL 524 3 (3,0)

Teaching the Metric System: PR: Rank III Certificate or C.I. Linear, area, volume, mass, force, and temperature measures from the metric system will be studied in relation to teaching aids, methods, and content. (K-12).

EDEL 530 4 (4,0)

Developmental Reading: PR: Rank III Certificate or C.I. Principles, procedures, organization, and current practices in the elementary reading program.

EDEL 535 3 (3,0)

Classroom Diagnosis and Treatment of Reading Difficulties: PR: EDEL 530 or equivalent. Principles and techniques of classroom diagnosis and corrective teaching in reading. Consideration of instructional materials.

EDEL 541 3 (3,0)

Science: A Process Approach (AAAS) as a Model program: PR: Rank II Certificate or C.I. Overview of general and special methods of science instruction; examines philosophy and materials of contemporary science programs; review curriculum development and curriculum change processes.

EDEL 542 3 (3,0) F,W,S,Su

Individualizing instruction in the Elementary School: PR: Rank III Certificate or C.I. Study of basic philosophy, organizational patterns, techniques, materials, and activities related to individualizing instruction in the elementary school classroom.

EDEL 560 4 (4,0) F

Programs in Early Childhood Education: PR: Rank III Certificate or C.I. Overview of the philosophy, content, facilities, instructional materials, and activities appropriate for children ages 3, 4, and 5; current research and new curricula. Concurrent laboratory experiences.

EDEL 561 4 (4,0) W

Organization of instruction in Early Childhood Education: PR: Rank III Certificate or C.I. Organization in instruction and techniques in areas relating to language arts, social sciences, science, mathematics, health and physical education; problems relating to reading readiness, perception and cognition. Concurrent laboratory experiences.

EDEL 562 4 (4,0) S

Creative Activities in Early Childhood: PR: Rank III Certificate or C.I. Organization of instruction and methods of teaching music and art in early childhood education; emphasis on creative experiences with music and art. Concurrent laboratory experiences.

EDEL 601 5 (5,0)

Elementary School Curriculum: PR: Rank III Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of elementary schools.

EDEL 606 3 (3,0)

Curriculum Design in Elementary Education: PR: Rank III Certificate or C.I. Design and construction of programs to meet needs of varying levels of student populations. (May be repeated.)

EDEL 610 3 (3,0)

Trends in Elementary School Science Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in science education research.

EDEL 620 3 (3,0)

Trends in Elementary School Mathematics Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in mathematics education research.

- EDEL 621** **3 (3,0)**
Diagnosis of Difficulties in Elementary School Mathematics: PR: Rank III Certificate or C.I. The study of diagnosis of symptoms and causes of specific learning skills in mathematics, K-12.
- EDEL 622** **4 (4,0)**
Remediation of Difficulties in School Mathematics: PR: EDEL 621. Selection of materials and techniques for a remedial program in mathematics (K-12) based on individual diagnosis.
- EDEL 623** **4 (4,0)**
Practicum in Diagnosis and Remediation of difficulties in Mathematics, K-12: PR: or CR: EDEL 621; CR, EDEL 622. Supervised diagnostic and remedial instruction with individual children; selection of instructional materials and techniques.
- EDEL 630** **3 (3,0) F,Su**
Trends in Reading Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in reading research.
- EDEL 632** **4 (4,0)**
Corrective Reading for Classroom Teachers I: PR: EDEL 535 or equivalent. A practicum for classroom teachers with emphasis on group diagnostic reading tests and classroom corrective techniques.
- EDEL 633** **4 (4,0)**
Corrective Reading for Classroom Teachers II: PR: EDEL 632 or equivalent. A continuation of EDEL 632.
- EDEL 635** **3 (3,0)**
Diagnosis of Difficulties in Reading: PR: EDEL 535 or equivalent. Administration and interpretation of individual tests. Consideration of physical, psychological and environmental factors contributing to reading difficulties.
- EDEL 636** **4 (4,0)**
Diagnostic Reading Practicum: PR: EDEL 635 or equivalent. Evaluation of reading abilities and difficulties of children in the reading laboratory of the University. Preparation of individual case reports.
- EDEL 637** **4 (4,0)**
Remedial Reading Practicum: PR or CR: EDEL 636. Supervised remedial instruction with individual children. Selection of instructional materials and techniques; preparation of case progress reports; parent interviews.
- EDEL 640** **3 (3,0) S,Su**
Trends in Language Arts Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in language arts research.
- EDEL 641** **3 (3,0)**
Investigation in Children's Literature: PR: Rank III Certificate or C.I. Analysis of the various approaches available for learning through the utilization of children's literature.
- EDEL 650** **3 (3,0)**
Trends in Elementary School Social Science Education: PR: Rank III Certificate or C.I. Analysis of historical development and current trends in social science education research.
- EDEL 681** **3 (3,0)**
Seminar in Early Childhood Education: PR: Rank III Certificate or C.I. Study and evaluation of research applicable to the design and construction of a curriculum for 3, 4 and 5 year old children.

EXCEPTIONAL CHILD EDUCATION

- EDEX 401** **4 (4,0) F,S**
Introduction to Exceptional Children: PR: C.I. An overview of educational programs, teaching procedures and educational materials necessary to provide for the needs of exceptional students.

- EDEX 402** **4 (4,0) W,Su**
Oral Communication Disabilities of Exceptional Children: PR: C.I. Identification and remediation procedures of communication disabilities, including the areas of speech, hearing, and language disorders.
- EDEX 403** **4 (4,0) W,Su**
Mental Retardation: PR: C.I. An orientation to the meaning, the prevalence, the courses, and educational provisions for the mentally retarded child.
- EDEX 404** **4 (4,0) W,Su**
Dimensions of Psycho-educational Appraisal: PR: C.I. Educational policies and procedures aimed at identification of exceptional children in the public schools; evaluation procedures for individual children.
- EDEX 431** **3 (3,0) F**
Teaching Mentally Retarded Students: PR: C.I. Organizing for instruction: present day and emerging diagnostic and prescriptive teaching practices.
- EDEX 432** **3 (3,0) W**
Curriculum and the Educable Mentally Retarded Child: PR: C.I. Curriculum content for the learning and motivational characteristics of the educable mentally retarded child.
- EDEX 433** **3 (3,0) W**
Curriculum and the Trainable Mentally Retarded Child: PR: C.I. Curriculum content for the learning and motivational characteristics of the trainable mentally retarded child.
- EDEX 501** **4 (4,0) F,S,Su**
Exceptional Children in the Schools: PR: Senior Standing or C.I. Characteristics, developmental patterns, educational problems, and appropriate educational programs for the exceptional children in schools.
- EDEX 502** **4 (4,0) W,Su**
Educational Implications for the Speech and Language Disorders of Exceptional Children: PR: Rank III Certificate or C.I. Identification, evaluation, interpretation, and planning appropriate learning experiences to aid exceptional children with speech, hearing, and language disorders.
- EDEX 503** **4 (4,0) S**
Fundamental Concepts of Mental Retardation: PR: Rank III Certificate or C.I. Characteristics, and symptom groupings, diagnostic procedures, learning characteristics, and educational treatment procedures of the mentally retarded.
- EDEX 504** **4 (4,0) W,Su**
Psycho-educational Appraisal of Exceptional Children: PR: Rank III Certificate or C.I. Selection of performance objectives, diagnostic measures, prescriptive teaching programs, and progress evaluation procedures for individualizing instruction.
- EDEX 531** **3 (3,0)**
Classroom Organization for Teaching the Mentally Retarded: PR: Rank III Certificate, EDEX 514 or C.I. Special class organization, scheduling, utilizing materials, equipment; analysis of instructional procedures for teaching mentally retarded.
- EDEX 532** **3 (3,0)**
Curriculum Planning Procedures for the Educable Mentally Retarded: PR: Rank III Certificate or C.I. Appropriate curriculum experiences and adjustments; media use; develop prevocational skills of educable mentally retarded children.
- EDEX 533** **3 (3,0)**
Curriculum Planning Procedures for the Trainable Mentally Retarded: PR: Rank III Certificate or C.I. Curriculum experiences, media use, pre-vocational skills development for developmental levels of trainable mentally retarded children.

- EDEX 611** **3 (3,0)**
Homemaking and Social Learning Skills for the Mentally Retarded: PR: Rank III Certificate or C.I. Personal development and management in clothing maintenance and repair, cooking, the use of hand tools, and homemaking tasks.
- EDEX 621** **3 (3,0) F,Su**
Theories of Learning Disabilities of School Children: PR: Rank III Certificate or C.I. An introduction to etiology of learning disorders, with emphasis on environmental deprivation, sensory development, and other impairment.
- EDEX 622** **3 (3,0) F,W,Su**
Instructional Diagnosis of the Learning Disabled Child: PR: EDEX 621. Evaluation techniques for diagnosing learning disabilities related to development in the basic school skills areas.
- EDEX 623** **3 (3,0) S**
Individualized and Prescriptive Instruction for the Learning Disabled Child: PR: Rank III Certificate or C.I. Study of program innovations and prescriptive programming for pupils with learning disabilities.
- EDEX 624** **3 (3,0) S,Su**
Behavior Management Techniques with Exceptional Children: PR: Rank III Certificate or C.I. Study of pupil management techniques, including group and individual procedures, for modifying the learning behavior of exceptional pupils.
- EDEX 641** **4 (4,0) F,S**
Behavior Disorders in Schools: PR: Rank III Certificate or C.I. Assessment/analysis of behavior disorders, cause and effects, identification and characteristics.
- EDEX 642** **4 (4,0) W,Su**
Development of a Personalized Program for Children with Behavior Disorders: PR: Rank 3 certificate or C.I. Study of various approaches to use in teaching children with behavior disorders, including precision teaching, behavior management techniques, and interpersonal communications skills.
- EDEX 643** **4 (4,0) S,Su**
Educational Programming for Children with Behavior Disorders: PR: Rank III Certificate or C.I. A study of existing models and theories of educational programs for children with behavior disorders.

EDUCATION — GUIDANCE

- EDGU 511** **4**
Introduction to Guidance in Schools: PR: Completion of Phase II of Educ. Prof. Prep. or Rank III or C.I. A basic course presenting an overview of the philosophy, organization, administration and operation of guidance and pupil personnel services in the schools.
- EDGU 612** **4**
Vocational and Career Development Procedures: PR: Rank III Certificate. Review of the forces which affect career choice and shape personal development. Emphasis on vocational counseling, career education, and parent-student-school interrelationships in making decisions.
- EDGU 613** **4**
Group Procedures in School Guidance Counseling: PR: Rank III Certificate, EDGU 511 or EDGU 615, or C.I. Nature, theory, process of group counseling including study of dynamics related to change in values and behavior of children and adolescents; class demonstration and practice.
- EDGU 614** **5**
Counseling Practicum in Schools. PR: Rank III Certificate, EDGU 511, 613, 615 or C.I. Supervised counseling emphasizing competence in (1) individual counseling; (2) working with groups; (3) tests in educational-vocational-personal counseling.

Theories and Techniques of Individual School Counseling: PR: EDGU 511 or C.I. Major theories and approaches to school counseling, correlating them with counterpart theories of personality and learning.

Procedures for School Group Guidance Testing: PR: EDTA 612 or C.I. Survey of various educational and psychological objective instruments used in schools to measure achievement, aptitude, interests, ability. Emphasis on administration and score interpretation.

LIBRARY SCIENCE

Foundations of Librarianship: PR: C.I. Survey of libraries and librarianship, origin, services, problems and current library literature. Library services on all levels and related terminology.

Media Center Organization and Operation: PR: C.I. Principles in organizing library collections of books and non-book materials. Circulation of materials, statistical records and maintenance of collections in school media centers.

Library Resources and Materials: Use of the library, basic reference material, library services and research methods.

Administrative Factors and Media: PR: EDLS 321, Involvement in planning, organizing, supervising and administering media centers.

Administration of the Library Media Center: PR: EDLS 301, Principles and practices of administration applied to elementary and secondary school library media centers. Methods of teaching the use of the library.

Cataloging and Classification: PR: EDLS 301, Cataloging and classification of library materials. Practical problems in descriptive cataloging, subject cataloging and the Dewey Decimal Classification as practiced in school media centers.

Non-Book Materials in the Schools: PR: EDLS 426, Securing, processing and utilizing non-book materials in the schools.

Acquisition and Processing Library Materials: PR: EDLS 321 or C.I. Searching, selecting, acquiring print and non-print materials.

Reference Materials and Services: PR: C.I. Selection, evaluation and use of basic print and non-print reference materials.

Utilization of Educational Media: PR: C.I. Principles and practices of communication theory and its application in the classroom. Emphasis on utilization and operation of the various classroom media.

Instructional Media Production: PR: EDLS 451, Selection, evaluation and production of instructional materials with emphasis on projected materials, display and presentation techniques.

Administrative Principles in Media Centers: PR: EDLS 321, Planning, organizing, directing, supervising and budgeting in school media centers. Personnel, public relations, and evaluating services. Planning buildings including equipment and furniture.

- EDLS 531** **4 (4,0)**
Non-Book Materials: PR: EDLS 431. The function, evaluation, selection, preparation for use, cataloging and preservation of non-book materials.
- EDLS 532** **4 (4,0)**
Acquisition of Library Materials: PR: EDLS 321 or C.I. Evaluation, selecting, and acquiring book and non-book materials. Selecting aids, reviewing media, publishers and jobbers. Procedures for budgeting, final records, gifts and exchanges.
- EDLS 541** **4 (4,0)**
Government Publications: PR: EDLS 441. United States government publications, state and international documents. Selection, acquisition and use as sources of information for school media centers.
- EDLS 551** **4 (4,0)**
Instructional Technology and the Curriculum: PR: EDLS 451. Use and selection of instructional materials as they apply to the curriculum in elementary and secondary schools.
- EDLS 611** **4 (4,0)**
Seminar in Library Media: PR: EDLS 421, EDLS 431, and EDLS 441. Problems in the development of collections for children and young people, reluctant readers and the non-reader. Controversial aspects of book selection and censorship.
- EDLS 641.** **4 (4,0)**
Reference Sources: PR: EDLS 441. Selection, evaluation and use of advanced and specialized reference materials in various subject fields.

MUSIC EDUCATION

- EDME 401** **2 (2,0)**
Elementary School Music Instructional Analysis: PR: EDTA 206 and EDTA 307. Instructional planning, sources of information, instructional techniques, evaluation, and organizational and administrative procedures in the elementary school music program.
- EDME 402** **2 (2,0)**
Secondary School Music Instructional Analysis: PR: EDTA 206 and EDTA 307. Instructional planning, teaching techniques, evaluation procedures, sources of information and current trends in the general music program for middle, junior and senior high schools.
- EDME 403** **2 (2,0)**
Instrumental Music Instructional Analysis: PR: EDTA 206 and EDTA 307. Organization and administration of the instrumental music program; sources of information, instructional aids and materials, rehearsal procedures, conducting techniques, evaluation procedures, and performance considerations.
- EDME 404** **2 (2,0)**
Vocal Music Instructional Analysis: PR: EDTA 206 and EDTA 307. Organization and administration of the vocal music program; sources of information, instructional materials, rehearsal procedures, conducting techniques, evaluation procedures, and performance considerations.
- EDME 601** **3 (3,0)**
Foundations of Music Education: PR: Rank III Certificate or C.I. Examination of historical, philosophical and psychological foundations of Music Education.
- EDME 602** **3 (3,0)**
Current Trends in Elementary School Music: PR: Rank III Certificate or C.I. Analysis of current materials, new programs and teaching techniques in elementary school music, emphasis on practical applications.
- EDME 603** **3 (3,0)**
Current Trends in Secondary School Music: PR: Rank III Certificate or C.I. Analysis of current materials, new programs, and teaching techniques in secondary school music. Emphasis on practical application.

- EDME 604** **3 (3,0)**
Problems in Music Education: PR: Rank III Certificate or C.I. A seminar approach for developing solutions to contemporary problems in music education. Current readings will be included.
- EDME 610** **3 (3,0)**
Teaching Musicianship: PR: C.I. Materials and procedures in presenting aural and visual aspects of music; evaluation procedures.

PHYSICAL EDUCATION — DEVELOPMENTAL

- EDPE 323** **2 (1,1) F,W,S,Su**
Instructional Analysis in Team Sports: PR: Sophomore standing. Analysis of neuromuscular performances and optimal approach to specific learning patterns in team sports.
- EDPE 324** **2 (1,1) F,W,S,Su**
Instructional Analysis in Tennis: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 325** **2 (1,1) F,W,S,Su**
Instructional Analysis in Aquatics: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 326** **2 (1,1) F,S,**
Instructional Analysis in Gymnastics and Tumbling: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific motor learning patterns.
- EDPE 327** **2 (1,1) F,W,**
Instructional Analysis in Golf: PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.
- EDPE 328** **2 (1,1) F,S,**
Instructional Analysis in Wrestling (M): PR: Sophomore standing. Mechanical analysis of neuromuscular performances and optimal approach to specific learning patterns.
- EDPE 329** **2 (1,1) F,S,**
Choreography of Contemporary Dance (W): PR: Sophomore standing. Dance production as an art form.
- EDPE 330** **2 (1,1) F,W,S,Su**
Instructional Analysis of Rhythmics: PR: Sophomore standing. Analysis of rhythm and rhythmic activities as they relate to teaching physical education.
- EDPE 350** **3 (2,1) F,W,S,Su**
Coaching Theory: PR: EDPE 323. Theory and methods of coaching for optimum sports performances.
- EDPE 360** **3 (2,1) F,W,S,Su**
School and Community Recreation: PR: Admission to Phase II or C.I. Knowledge and skills of after school activity and summer recreational programs.
- EDPE 410** **3 (2,2) F,W,S,Su**
Kinesiomechanics: PR: ZOOL 324. Mechanics of human movement. Anatomical and mechanical analysis of motor tasks and individual performance. Laboratory experience in analytical and evaluative methods.
- EDPE 421** **4 (2,2) F,W,S,Su**
Exercise Physiology — Cardiovascular: PR: ZOOL 324. A circulatory study of man's homeostatic regulation during environmental stress. (Includes lecture and laboratory.)
- EDPE 422** **4 (2,2) F,W,S,Su**
Exercise Physiology — Respiratory: PR: ZOOL 324 and EDPE 421. A study of metabolic costs and respiratory adjustment to exercise.

- EDPE 430** **4 (2,3) F,S,Su**
Human Performance Learning: PR: EDTA 306 or equivalent. Theories of movement and factors influencing the learning of gross and fine motor skills. (Includes lecture and laboratory.)
- EDPE 440** **3 (2,1) F,S,Su**
Rehabilitation Training Techniques: PR: EDPE 410. Recognition and rehabilitation of sports injuries, including first aid.
- EDPE 441** **3 (2,1) Su**
Adapted Physical Education: PR: EDPE 410 and EDPE 422. Principles and methods for adapting physical education activities and programs for atypical participants. Nature of typical specific disabilities.
- EDPE 450** **3 (3,0) F,W,S,Su**
Organization and Administration of Physical Education: PR: EDSE 380 or EDEL 318. Administering and organizing for instruction of the physical education class and the total school physical education program.
- EDPE 455** **3 (3,0) W,Su**
Coaching Problems: PR: EDPE 350. Identification, analysis, and evaluation of problems in athletic coaching.
- EDPE 482** **3 (3,0) W,Su**
Measurement and Evaluation in Physical Education: PR: Jr. standing and completion of Phase I. Techniques of Measurement and evaluation in Physical Education.
- EDPE 555** **3 (3,0)**
Professional Coaching Problems: PR: Rank III Certificate or C.I. A seminar approach to problems and methods of coaching, including analysis of various philosophies.
- EDPE 601** **3 (3,0)**
Philosophical Foundations of Physical Education: PR: Rank III Certificate or C.I. Analysis of the forces and events leading to the development of current concepts in physical education.
- EDPE 602** **3 (3,0)**
Current Trends in Physical Education: PR: Rank III Certificate or C.I. A comprehensive review of the literature influencing trends in physical education.
- EDPE 603** **3 (3,0)**
Organization and Design of Physical Education Programs: PR: Rank III Certificate or C.I. Study of physical education and its existing organization. Emphasis on ethics, values, principles and issues.
- EDPE 604** **3 (3,0)**
Administration in Physical Education: PR: Rank III Certificate or C.I. Study of current problems in the administration of school physical education programs.
- EDPE 621** **5 (3,2) Su**
Physiology of Exercise — Environmental: PR: Rank III Certificate or C.I. A study of physiological adaptation resulting from prescribed physical activity programs.
- EDPE 624** **3 (2,1)**
Rhythmics: PR: Rank III Certificate or C.I. Instructional analysis in classical and modern rhythms.
- EDPE 631** **5 (3,2) Su**
Motor Learning: PR: Rank III Certificate or C.I. A study of optimal human factors controlling performance.
- EDPE 632** **3 (2,1)**
Perceptual Motor Development: PR: EDTA 614 or C.I. Study of the relationship between perceptual motor development and learning. Special attention is given to the effects on academic achievement and reading.

- EDPE 660** **3 (3,0)**
School Recreation: PR: Rank III Certificate or C.I. A study of recreational programs related to the public schools.
- EDPE 680** **3 (2,1)**
Kinesiological Analysis of Individual Activities: PR: Rank III Certificate or C.I. Analytical techniques of kinesiology and their methods of application to individual motor activities.
- EDPE 681** **3 (2,1)**
Kinesiological Analysis of Team Activities: PR: Rank III Certificate or C.I. Analytical techniques of kinesiology and their methods of application to team motor activities.
- EDPE 682** **3 (3,0)**
Measurement in Kinesiology and Physical Education: PR: Rank III Certificate or C.I. Techniques of measurement and evaluation of human performance and their applications to physical education.
- EDPE 689** **4 (4,0)**
Special Readings: PR: EDTA 601, EDTA 612, and C.I. Comprehensive review of literature related to a selected topic in physical education: identification, analysis, and evaluation of developments, issues, and research problems.

PROFESSIONAL LABORATORY — APPLICATION

- EDPL 320** **3 (0,14) F,W,S**
Elementary School Student Teaching - Block A: PR: EDTA 206 and EDTA 307. Junior year student teaching in an elementary school under the supervision of a certified classroom teacher.
- EDPL 321** **3 (0,14) F,W,S**
Elementary School Student Teaching - Block B: PR: EDPL 320. Junior year student teaching in an elementary school under the supervision of a certified classroom teacher.
- EDPL 330** **3 (0,14) F,W,S**
Secondary School Student Teaching - Block A: PR: EDTA 206 and EDTA 307. Junior year student teaching in a secondary school under the supervision of a certified classroom teacher.
- EDPL 408** **3 (3,0) F,W,S**
Teaching Strategies: PR: Admission to Phase III. Seminar taken concurrently with student teaching exploring class management, aspects of professional and personal development, and current school problems and possible solutions.
- EDPL 421** **0 (0,30) F,W,S**
Elementary School Student Teaching - Block C: PR: EDPL 321. Senior year student teaching in an elementary school under the supervision of a certified classroom teacher.
- EDPL 430** **9 (0,30) F,W,S**
Secondary School Student Teaching - Block C: PR: EDPL 330. Senior year student teaching in a secondary school under the direction of a certified classroom teacher.
- EDPL 450** **2-12 (0,2-12)**
Direct Field Experience: PR: Approval of Professional Laboratory Chairman. Field experience in an appropriate educational setting under the direction of a supervising teacher and/or university supervisor.
- EDPL 551** **1-12 (0,1-12) F,W,S**
Supervised Teaching Practicum with Exceptional Children: PR: Bachelor's degree, approved program, and C.I. Supervised observation and teaching under the direction of a properly certified exceptional child teacher.
- EDPL 558** **4 (3,1) F,W,S**
Supervision of Professional Laboratory Experiences: PR: C.I. Study of the

undergraduate professional laboratory experiences program with emphasis on the role and responsibilities of the Teacher Education Associate or Supervising Teacher.

EDPL 650 **2-12 (0,2-12)**

Internship: PR: Approval of Professional Laboratory Chairman. Internship in an appropriate educational setting under the direction of a qualified supervisor.

EDPL 651 **4 (4,0)**

Research Utilizing Problem Solving: PR: Rank III Certificate or C.I. The identification and diagnosis of classroom and/or school building problems. Action plans are formulated to resolve these problems and to evaluate action taken.

SECONDARY EDUCATION — DEVELOPMENTAL

EDSE 303 **3 (3,0) F,W,S**

School Programs: PR: EDTA 206 and EDTA 307. A study of the public school curriculum, kindergarten through grade twelve.

EDSE 305 **3 (3,0)**

Secondary School Curriculum: PR: EDTA 206 and EDTA 307. Study of total school patterns with emphasis on new trends, including subject areas, administration, supervision, school services and school related activities.

EDSE 310 **4 (3,2)**

Speech Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of instructional programs in speech; objectives, materials, techniques, organization for instruction, evaluation procedures, current research.

EDSE 320 **3 (3,1)**

Foreign Language as Human Behavior: PR or CR; ENG 371 or C.I. Nature of language, objectives of foreign language learning and introduction to teaching basic skills. One hour laboratory required each week.

EDSE 321 **4 (3,2)**

Foreign Language Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching foreign language.

EDSE 330 **4 (3,2)**

Business Instructional Analysis I: PR: EDTA 206 and EDTA 307. Techniques, materials, and instructional media; psychological principles, evaluation, and current trends in typewriting instruction.

EDSE 340 **4 (3,2)**

English Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching English.

EDSE 350 **4 (3,2)**

Mathematics Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching mathematics.

EDSE 360 **4 (3,2)**

Science Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials which have special application for teaching science.

EDSE 370 **4 (3,2)**

Social Science Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of instructional programs in Social Sciences; objectives; materials; techniques; organization of instruction; evaluation procedures; current research.

EDSE 380 **4 (3,2)**

Physical Education Instructional Analysis: PR: EDTA 206 and EDTA 307. Study of course objectives for the high school curriculum and survey of methods and materials having special application for teaching physical education.

- EDSE 404** **3 (3,0) F,W,S**
Instructional Techniques: PR: EDPL 330, CR: EDPL 408 and EDPL 430. Procedures, applications and evaluation of technical skills a teacher may employ in the classroom.
- EDSE 421** **3 (3,1)**
Oral Teaching of Foreign Languages: PR: EDPL 330 or C.I. Audio-lingually-based demonstration class. Practice in linguistic methods. One hour laboratory required each week.
- EDSE 431** **3 (3,0)**
Business Instructional Analysis II: PR: EDTA 206 and EDTA 307. Techniques, materials, and instructional media; psychological principles, evaluation and current trends in shorthand and related instruction.
- EDSE 432** **3 (3,0)**
Business Instructional Analysis III: PR: EDTA 206 and EDTA 307. Techniques, materials, and instructional media; psychological principles, evaluation, and current trends in accounting and basic business instruction.
- EDSE 440** **3 (3,0)**
Teaching Language and Composition: PR: EDTA 206 and EDTA 307. Techniques and methods in teaching of dialects, semantics, the various grammars. A survey of composition and rhetorical methods of selected authors.
- EDSE 441** **3 (3,0)**
Literature for Adolescents: PR: Senior standing or C.I. Selecting and evaluating books for adolescents with emphasis on the uses of literature in the development of young people.
- EDSE 442** **3 (3,0) F,W,S,Su**
Teaching Reading in the Content Areas: PR: Senior standing or C.I. Study of techniques and materials to develop reading comprehension, vocabulary, rate and study skills of secondary students in content areas; diagnosis; evaluation.
- EDSE 453** **3 (3,0)**
Mathematics Laboratory Methods: PR: EDTA 206 and EDTA 307. Mathematics topics with special applications in classroom laboratory situations.
- EDSE 461** **3 (1,4)**
Biology Laboratory Teaching: PR: Senior standing. Participation in introductory level biology laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.
- EDSE 462** **2 (1,3)**
Chemistry Laboratory Teaching: PR: Senior standing. Participation in introductory level chemistry laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.
- EDSE 463** **2 (1,3)**
Chemistry Laboratory Teaching: PR: EDSE 462. Continuation of EDSE 462.
- EDSE 464** **2 (1,3)**
Physics Laboratory Teaching: PR: Senior standing. Participation in introductory level physics laboratory. Includes laboratory set-ups, laboratory staff meetings and a weekly seminar.
- EDSE 465** **2 (1,3)**
Physics Laboratory Teaching: PR: EDSE 464. Continuation of EDSE 464.
- EDSE 471** **3 (3,0)**
Trends in Secondary School Social Science: PR: Senior standing. Identification, development and evaluation of major social science concepts as they relate to contemporary school programs.
- EDSE 501** **4 (4,0)**
Nature and Theory of the Middle School Curriculum: PR: Rank III Certificate or C.I. Philosophical constructs, characteristics of transescent youths, and organizational patterns in Middle School operation.

- EDSE 502** **4 (4,0)**
Middle School in Action: PR: Rank III Certificate or C.I. Supervised experiences designed to assist the development of individual competencies necessary of the Middle School educator.
- EDSE 504** **4 (4,0)**
Secondary School Curriculum Improvement: PR: Rank III Certificate or C.I. Secondary School self-studies for curriculum projects, accreditation reports, or staff development.
- EDSE 521** **3 (3,0)**
Media and Research in Foreign Language Teaching: PR: Rank III Certificate or C.I. Rationale and use of technological aids in foreign language teaching, classroom research and evaluation.
- EDSE 541** **4 (4,0)**
Media and Methods in English Education: PR: Rank III Certificate or C.I. Practicum in the use of various media in the English classroom with emphasis on student film making and production of media.
- EDSE 550** **3 (3,0)**
Intermediate School Mathematics: PR: Rank III Certificate or C.I. Diagnosis and remediation of learning difficulties in mathematics and selected individualized learning activity packages on mathematics topics for middle and junior high school mathematics teachers.
- EDSE 553** **3 (3,0)**
Laboratory Programs in Mathematics: PR: Rank III Certificate or C.I. Design, organization and development of special materials and projects for mathematics independent study.
- EDSE 560** **3 (3,0)**
Intermediate School Programs: PR: Rank III Certificate or C.I. Basic concepts, philosophies, and formats of experimental middle and junior high school science programs.
- EDSE 561** **3 (3,0)**
Inquiry in the Sciences: PR: Rank III Certificate or C.I. The techniques in teaching science by inquiry in the secondary school with the opportunity to participate in and develop inquiry lessons.
- EDSE 562** **3 (3,0)**
High School Biology Concepts: PR: Rank III Certificate or C.I. Major concepts in BSCS biology and other modern biology programs.
- EDSE 570** **3 (3,0)**
Intermediate School Social Science: PR: Rank III Certificate or C.I. Identification, development and evaluation of major social science concepts, new materials and teaching strategies related to Middle and Junior High School programs.
- EDSE 571** **3 (3,0)**
Inquiry in the Social Studies: PR: Rank III Certificate or C.I. An in-depth development of the role of inquiry in the new social studies with opportunity both to participate in and to develop inquiry episodes.
- EDSE 601** **3 (3,0)**
Nature and Theory of Curriculum: PR: Rank III Certificate or C.I. Philosophical and psychological basis for American education and the implications for curricular decision-making.
- EDSE 602** **3 (3,0)**
Patterns of Curriculum and Instruction: PR: Rank III Certificate or C.I. An analysis of exemplary secondary school programs and instructional procedures.
- EDSE 604** **3 (3,0)**
Seminar in Secondary School Instruction: PR: Rank III Certificate or C.I. Systematic and objective analysis of instruction, human relations, approaches to improving instructions and teaching strategies.

- EDSE 611** **5 (5,0)**
Curriculum in the Secondary School: PR: Rank III Certificate or C.I. Analysis of the forces which shape and contribute to the vertical and horizontal curriculum designs of secondary schools.
- EDSE 621** **3 (3,0)**
Trends in School Foreign Language Programs: PR: Rank III Certificate or C.I. Development, articulation and innovations in foreign language curriculums.
- EDSE 622** **3 (3,0)**
Linguistic Analysis in Teaching Foreign Languages: PR: Rank III Certificate or C.I. Linguistic aspects of foreign language learning. Applied linguistics and psycholinguistics in language teaching.
- EDSE 641** **3 (3,0)**
English Programs in the Secondary School: PR: Rank III Certificate or C.I. Concepts, problems, and advanced topics in such programs as Project English and other secondary school English projects.
- EDSE 642** **3 (3,0)**
Reading Guidance for Adolescents: PR: Rank III Certificate or C.I. Review of literary works appropriate for young people to provide insight into psychological problems common to teenagers.
- EDSE 643** **3 (3,0) F,W,S,Su**
Reading in the Content Areas: PR: Rank III Certificate or C.I. Identification and evaluation of reading skills, diagnosis of reading problems, and development of methods and materials to increase student reading performance.
- EDSE 651** **3 (3,0)**
Topics in Secondary School Mathematics: PR: Rank III Certificate or C.I. Major concepts in modern secondary school programs and selected individualized learning activity packages on mathematics topics for secondary school mathematics teachers.
- EDSE 652** **3 (3,0)**
Seminar in Mathematics Teaching: PR: Rank III Certificate or C.I. A review of prominent research and the writings of selected authors in mathematics education.
- EDSE 662** **3 (3,0)**
Laboratory Programs in Science Education: PR: Rank III Certificate or C.I. Design, organization and development of special materials and projects for science independent study centers.
- EDSE 671** **3 (3,0)**
Laboratory Programs in the Social Sciences: PR: EDSE 571 or C.I. Design, organization and development of special materials related to selected conceptual specializations.
- EDSE 672** **3 (3,0)**
Contemporary Social Science Education: PR: Rank III Certificate or C.I. A survey of recent developments and contemporary programs in all areas of the social sciences.

TEACHING ANALYSIS

- EDTA 206** **3 (3,0) F,W,S,Su**
Human Development: Analysis of basic principles and applications in growth and learning from conception through adolescence. EDTA 307 recommended concurrently.
- EDTA 305** **3 (3,0) F,W,S**
Principles of Evaluation: PR: Successful completion of Teaching Analysis (EDTA 307), and Human Development (EDTA 206). Principles of evaluation applied to advising pupils, diagnosing learning deficiencies, determining effectiveness of instruction and judging pupil progress.

- EDTA 306** **3 (3,0) F,W,S**
Variables Affecting School Learning: PR: Successful completion of Phase I. Study of learning principles affecting classroom teaching/learning with particular attention to those most relevant to teacher/student interaction.
- EDTA 307** **5 (3,2) F,W,S,Su**
Teaching Analysis: Initial requirement; an opportunity to examine and participate in general and specific dimensions of teaching with socio-economics factors emphasized. EDTA 206 recommended concurrently.
- EDTA 480** **3 (3,0) F,W,S,Su**
Overview of Education: Study of public education in the United States focusing on the development of structure and process in the educational enterprise.
- EDTA 481** **3 (3,0) F,W,S,Su**
Trends and the Future of Education: Identification of trends and postulations concerning the future of education and formulation of criteria for appraisal of innovations in education.
- EDTA 490** **2 (2,0) F,W,S,Su**
Senior Seminar: Education in Human Affairs: Provides an overview of basic objectives, strategies, and techniques in education. This course, primarily intended for the senior student, is offered as one of the advanced Environmental Studies Seminars. Not open to the student enrolled in the College of Education.
- EDTA 602** **3 (3,0) F,S,Su**
Statistics for Educational Data: PR: EDTA 695, Rank III Certificate or C.I. Research methods applicable to educational settings. Design rationale, parametric and non-parametric statistics, and data interpretation.
- EDTA 611** **3 (3,0) W,Su**
Social Factors in American Education: PR: Rank III Certificate or C.I. Analysis of general and specific aspects of American education as they relate to Social and Behavioral Sciences.
- EDTA 612** **3 (3,0) F,W,S,Su**
Measurement and Evaluation in Education: PR: EDTA 695, Rank III Certificate or C.I. Rationale and construction of evaluative instruments, including classroom tests. Analysis of standardized and non-standardized tests in the classroom.
- EDTA 613** **3 (3,0) F,W,S,Su**
Behavior Problems in the Public School: PR: Rank III Certificate or C.I. Role of the teacher in identification, strategies for remediation and referral procedures for working with behavioral problem children. Mental hygiene principles stressed.
- EDTA 614** **3 (3,0) F,S,Su**
Studies in Human Development and Childhood: PR: Rank III Certificate or C.I. Recent research in Human Development and childhood relevant to contemporary American education. Emphasis prenatal through age 11.
- EDTA 615** **3 (3,0) W,Su**
Analysis of Classroom Teaching: PR: EDTA 695, or Rank III Certificate or C.I. Analyses of verbal and non-verbal behaviors of teachers and their effect upon classroom instruction and learning.
- EDTA 616** **3 (3,0) F,S,Su**
Techniques of Game Use in Education: PR: Rank III Certificate or C.I. Analysis, development, and use of educational games as an approach to classroom teaching.
- EDTA 617** **3 (3,0) F,S,Su**
Adolescent Development and the Schools: PR: Rank III Certificate or C.I. Recent research in human development in adolescence with special emphasis upon research of interest to secondary school teachers.

EDTA 618

3 (3,0) F,W,Su

Philosophical Foundations of Classroom Learning: PR: EDTA 695, or Rank III Certificate or C.I. A systematic approach to the philosophical bases of learning and the effect such philosophies have on school programs and curriculum.

EDUCATION — VISUAL ARTS

EDVA 401

3 (3,0)

Elementary School Art Instructional Analysis: PR: EDTA 206 and EDTA 307 or C.I. Methods and curriculum materials appropriate for teaching Visual Arts in the elementary schools.

EDVA 402

3 (3,0)

Secondary School Art Instructional Analysis: PR: EDTA 206 and EDTA 307 or C.I. Methods and curriculum materials for teaching Visual Arts in the secondary schools.

EDVA 404

3 (3,0)

Continuing Art Progress in Schools: PR: EDVA 401 and EDVA 402 or C.I. Programs and innovations for visual arts in the schools.

EDVA 405

3 (3,0)

Schools Found Arts: PR: EDVA 431 and EDVA 432 or C.I. Appropriate materials for instruction in public schools will be examined and utilized.

EDVA 431

5 (5,0)

Two-Dimensional Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of two-dimensional materials to appropriate levels of instruction: chalk, ink, water color, crayon, tempera, acrylics, paper, fiber, and oils.

EDVA 432

5 (5,0)

Three-Dimensional Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of three-dimensional materials to appropriate levels of instruction: wood, paper, plaster, stone, clay, wax, fiber, metal, and synthetics.

EDVA 433

5 (5,0)

Graphic Instructional Materials: PR: EDVA 401 or EDVA 402 or C.I. Application of graphic materials to appropriate level of instruction: direct and indirect basic processes of reproduction of mono and multi-printing.

EDVA 503

3 (3,0)

Jewelry Making in Schools: PR: C.I. Jewelry making appropriate for school age children using standard public school equipment.

EDVA 504

3 (3,0)

Contemporary Visual Arts Education: PR: EDVA 401 and EDVA 402 or C.I. A study of current programs and innovations in public school Visual Arts Programs.

EDVA 505

3 (3,0)

Found Arts: PR: EDVA 431 and EDVA 432 or C.I. Materials available for instruction in the public schools will be explored in depth in relation to their appropriateness and productive qualities.

EDVA 601

3 (3,0)

Two-Dimensional Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 431, or C.I. Application of two-dimensional materials to appropriate levels of instruction: chalk, ink, water color, crayon, tempera, acrylics, paper, fiber, and oils.

EDVA 602

3 (3,0)

Three-Dimensional Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 432, or C.I. Application of three-dimensional materials to appropriate levels of instruction: wood, paper, plaster, stone, clay, wax, fiber, metal, and synthetics.

EDVA 603

3 (3,0)

Graphic Instructional Materials: PR: EDVA 401, EDVA 402, and EDVA 433, or

C.I. Application of graphic materials to appropriate level of instruction: direct and indirect basic processes of reproduction of mono and multi-printing.

VOCATIONAL/TECHNICAL EDUCATION

EDVE 381 3 (3,0)

Career Development Analysis: Analysis of job core areas, Community, state and federal informational services, educational requirements and employment prospects in selected areas. Application and job interview techniques.

EDVE 401 4 (4,0)

Philosophy and Principles of Technical Education: PR: Rank III Certificate or C.I. Overview of technical/vocational education; study of purposes, organization curriculum, financial supports, trends and history of technical/vocational education.

EDVE 402 5 (5,0)

Methods of Teaching Technical/Vocational Subjects: PR: Rank III Certificate or C.I. A study of the techniques, skills and procedures used in teaching technical/vocational education subjects.

EDVE 411 4 (4,0)

Analysis of Vocational Occupations: PR: Rank III Certificate or C.I. Techniques of analyzing components of an occupation to obtain content for instruction.

EDVE 421 4 (4,0)

Curriculum Planning for Vocational Education: PR: Rank III Certificate or C.I. Systematic development of a course of study for use in teaching a subject in an occupational area.

EDVE 422 4 (4,0)

Evaluation of Occupational Instruction: PR: Rank III Certificate or C.I. This course is concerned with the total evaluation process as it relates specifically to vocational instruction.

EDVE 423 4 (4,0)

Analysis of Learning as Applied to Vocational Education: PR: Rank III Certificate or C.I. Course is designed to familiarize the vocational application to the Vocational classroom.

EDVE 451 4 (4,0)

Occupational Education Facilities: PR: Rank III Certificate or C.I. Procedures and techniques in planning occupational educational facilities.

EDVE 461 4 (4,0)

Instructional Analysis in Industrial/Technical Education: PR: Rank III Certificate or C.I. Course objectives, techniques, materials, evaluation, and instructional media having special application for teaching occupational and technical subjects.

EDVE 462 4 (4,0)

Classroom Management in Occupational Education: PR: Rank III Certificate or C.I. Fundamentals of managing an occupational classroom or laboratory involving the concepts used in industrial plant management.

EDVE 463 4 (4,0)

Development of Occupational Education Programs: PR: Rank III Certificate or C.I. Occupational task analysis techniques and its application in formulating a basic instructional plan.

EDVE 481 4 (4,0)

Principles of Occupational Education: PR: Rank III Certificate or C.I. Recent developments, contemporary programs, and structure of vocational, technical, and adult education.

EDVE 482 4 (4,0)

School/Community Development for Vocational Education: PR: Rank III Certificate or C.I. Identification, analysis, and maintenance of working relationships between school and community institutions.

EDVE 571**(4-8)**

Occupational Work Experience: PR: Rank III Certificate and C.I. Directed occupational work experiences and seminar in selected offices, businesses or industries. Designed to fulfill one year's occupational experience in business and vocational education.

ELECTRICAL ENGINEERING AND COMMUNICATIONS SCIENCES

EECS 311**4 (3,3) F,S**

Introduction to Digital Circuits: PR: COMP 205. Electrical components used in digital switching circuits; properties of magnetic materials; construction of basic logic gates and flip-flops. Intended primarily for computer science majors.

EECS 321**4 (3,3) F,W,**

Electrical Networks: PR: ENGR 321. Analysis of linear circuits. Laplace and Fourier transform techniques. State variable representation.

EECS 322**4 (3,3) W,S,**

Electronic Engineering: PR: ENGR 322. Electronic devices and circuits including small signal amplifiers, and switching circuits.

EECS 341**4 (4,0) F,W**

Electromagnetic Fields: PR: ENGR 322 and MATH 331. Introduction to electrical fields and waves.

EECS 411**4 (3,3) F,S**

Logical Component Design: PR: ENGR 322. Switching theory and logical design. Logic circuit minimization techniques. Applications to serial and parallel digital components including adders, registers and counters.

EECS 412**4 (3,3) W**

Logical Systems Design: PR: EECS 411. Systems investigation, design, and operation of digital computers; study of a basic hardware set and a basic software set.

EECS 413**4 (3,3) W**

Digital Systems Organization: PR: EECS 411 or EMCS 431 or COMP 305. Design, analysis and implementation of computer based control systems utilizing minicomputers and microprocessors.

EECS 414**3 (2,2) S**

Analog Computers: PR: ENGR 321 and ENGR 342. Theory and operation of modern analog computer. Analysis and synthesis of continuous and discrete systems by simulation.

EECS 431**3 (2,3)**

Electrical Machinery: PR: ENGR 323. Methods and techniques of systems analysis applied to the dynamics of electrical machinery.

EECS 442**4 (3,3) W**

Microwaves: PR: EECS 341. Microwave devices and systems and measurement techniques.

EECS 451**4 (3,3) S**

Communication Systems: PR: EECS 321 and EECS 322. Information transmission, modulation, and noise.

EECS 461**3 (2,3) F**

Semiconductor Devices: PR: EECS 322 and ENGR 352. Semiconductors with uniform and non-uniform impurity distributions; impurity diffusion, analysis of the p-n junction. Junction and metal-oxide FET and other devices.

EECS 464**3 (2,3) S**

Active Circuits: PR: EECS 322. CR: ENGR 421. Integrated circuit fabrication and characteristics. Feedback amplifier types, performance and stability. Introduction to operational amplifier design and application.

- EECS 513** **3 (3,0) F**
Introduction to Digital Systems: PR: EECS 411 or equivalent. Combinational logic, sequential logic, introduction to controller design.
- EECS 531** **3 (3,0)**
Environmental Control Systems: PR: ENGR 421 or equivalent. Modeling, control methods, stability, and optimization applied to environmental systems.
- EECS 535** **3 (3,0) W**
Electric Power Generation and Distribution: PR: ENGR 323 or equivalent. Introduction to electric energy sources. Concept of complex power in single and three phase systems. Synchronous machines, power transformer, and transmission lines.
- EECS 543** **3 (3,0) F**
Coherent Optics Applications: PR: PHYS 354. Theory of coherent optical radiation and propagation. Design and analysis of optical components and systems.
- EECS 551** **3 (3,0) F**
Signal and System Analysis: PR: EECS 321. Difference equations, transform techniques, state variables applied to continuous and discrete systems.
- EECS 553** **3 (3,0) F**
Random Processes: PR: EECS 321 and ENGR 371. Random variables, averaging, sampling, elements of probability theory.
- EECS 612** **3 (3,0) Su**
Synthesis of Electric Filters: Analysis and synthesis of electric filters.
- EECS 613** **3 (3,0) W**
Computer System Design: PR: EECS 513 or C.I. The specification, design, and programming of a digital computer system. Examination of digital systems architecture using a digital design language.
- EECS 621** **3 (3,0) S**
Digital Computer Systems: PR: EECS 613, EMCS 431 or C.I. Investigation of various computer systems. The Processor-Memory-Switch level of system analysis applied to systems with one or more central or I/O processors.
- EECS 623** **3 (3,0) F**
Modern Analog Computers: Analog programming fundamentals and techniques emphasizing integral use of logic and analog elements as applied to parameter optimization, boundary value problems, and partial differential equations.
- EECS 624** **1 (0,3) F**
Modern Analog Computer Laboratory: CR: EECS 623. Laboratory for EECS 623 consisting of simulation using a modern analog computer.
- EECS 631** **3 (3,0) W**
Modern Control Theory: State space method of analysis for discrete and continuous control, phase plane, Lyapunov stability.
- EECS 632** **3 (3,0) S**
Optimal Control Systems: PR: EECS 631. Cost Function, control restraints, initial and target states. Pontryagin's theorem, time, fuel, and energy optimization.
- EECS 633** **3 (3,0) Su**
Nonlinear Control Systems: PR: EECS 631. Analysis and synthesis techniques for nonlinear systems, stability classifications, limit cycles, Popov's theorem. State variable description.
- EECS 641** **3 (3,0) Su**
Electromagnetic Fields: Maxwell's equations. Boundary conditions. Propagation, reflection, and refraction of waves. Guided waves. Radiation.
- EECS 643** **3 (3,0) W**
Optical Electronics: PR: EECS 543 or C.I. Introduction to optical electronic

systems, such as both gas and solid state laser systems, optical detectors, modulators, and frequency convertors. Optical communication systems.

EECS 644 **3 (3,0) S**

Fourier Optics: Application of Fourier Transform theory to optical systems. Development of optical correlation techniques. Holographic techniques and applications.

EECS 645 **3 (3,0)**

Remote Sensing Optical Systems: PR: EECS 341 or equivalent. Study of electromagnetic phenomena and systems at optical and near optical wavelengths and the use of such systems in environmental monitoring.

EECS 652 **3 (3,0) W**

Digital Processing of Signals: PR: EECS 551 or C.I. Linear discrete system theory, z-transform theory, discrete spectrum analysis, digital filtering, and Fast Fourier Transforms.

EECS 653 **3 (3,0) W**

Communication Theory: PR: EECS 553 or C.I. Theory of communicating in the presence of noise, modulation, optimum filtering, phase-lock loop.

EECS 655 **3 (3,0) S**

Communication Systems: PR: EECS 653 or C.I. Deep-space, LOS, and tropo-scatter communication system. Phase-locked loops, fading, diversity, ranging. SNR and Error-rate calculations.

EECS 662 **3 (3,0) F**

Amplifier Design: Small-signal device models; analysis and synthesis of electronic amplifier circuits in frequency and time domains.

EECS 664 **3 (3,0) W**

Operational Amplifiers: The differential amplifier stage, multi-staging, linear circuit applications, uses in non-linear circuits, active filters.

ENGINEERING CORE

ENGR 100 **4 (4,0) F,W,S,Su**

Oceanography and Space: Fundamentals of oceanography and space with emphasis on the engineering aspects and uses. May be used to satisfy Scientific Environment requirement of Environmental Studies Program.

ENGR 101 **3 (2,2) F,W**

Engineering Graphics: Spatial visualization, sketching, and graphical presentation as a form of engineering communication. Engineering drawing, descriptive geometry, manipulation of vectors and graphical solution techniques.

ENGR 103 **4 (3,2) F,W**

Creative Design: PR: C.I. Role of the engineer as a creative design professional. Emphasis on understanding the creative process and the factors that influence it. Case studies.

ENGR 104 **3 (3,0)**

Man Made World: Introduction to engineering and its role in the understanding of the man made world.

ENGR 151 **3 (2,2) F,W**

Chemical Foundations of Engineering: PR: Satisfactory performance in one year of high school chemistry or physics; CR: MATH 211. Engineering applications of basic chemical concepts. Atomic and molecular structure, states of matter and their energies, chemical equilibria and reaction rates, organic compounds, and industrial processes.

ENGR 152 **3 (2,2) W**

Chemical Foundations of Engineering: PR: ENGR 151. Continuation of ENGR 151.

ENGR 211 **4 (4,0) F,W,S,Su**

Engineering Concepts: CR: MATH 321. Introduction to the basic physical

phenomena essential to understanding of engineering structures, machines processes, and systems. Primary emphasis on mechanics, materials behavior, and thermofluid mechanics phenomena.

- ENGR 310** **4 (4,0) F,W,S,Su**
Engineering Analysis — Statics. PR: ENGR 211 and MATH 322. Fundamental concepts of mechanics including resultants of force systems, free-body diagrams, equilibrium of rigid bodies, and analyses of structures.
- ENGR 311** **4 (4,0) F,W,S,Su**
Engineering Analysis — Dynamics: PR: ENGR 310, and MATH 323. Kinematics and kinetics of particles and rigid bodies; mass and acceleration, work and energy, and impulse and momentum.
- ENGR 312** **5 (4,2) F,W,S,Su**
Mechanics of Materials: PR: ENGR 211; CR: MATH 331. Concepts of stress and strain, Hooke's Law; strength and deflection of axial force members, shafts in torsion and beams in flexure; combined stress; stability of columns.
- ENGR 320** **4 (4,0) F,W,S,Su**
Electrical Science: PR: MATH 323 and ENGR 211. General concepts of electricity and magnetism; the development of fundamental laws of electrical engineering; the introduction of the basic circuit elements.
- ENGR 321** **4 (3,2) F,W,S,Su**
Principles of Electrical Engineering: PR: ENGR 320; CR: MATH 331 and COMP 102. Introduction to fundamental laws of electrical circuits, including transient, steady-state AC, and general network analysis.
- ENGR 322** **4 (3,2) F,W,S,Su**
Electronic Engineering: PR: ENGR 321. Introductory concepts of electronic components with emphasis on solid state devices, basic amplifiers, biasing, small signal performance.
- ENGR 323** **4 (3,2) F,W,S,Su**
Electrical Devices and Systems: PR: ENGR 322. Electromagnetic energy conversion devices, feedback amplifiers, and instrumentation.
- ENGR 331** **3 (3,0) F,W,S,Su**
Thermodynamics: PR: ENGR 311; CR: MATH 324. Work, heat and energy transformations. Relation of properties. Laws, concepts and modes of analysis common to all applications of thermodynamics in engineering.
- ENGR 332** **4 (3,2) F,W,S,Su**
Fluid Mechanics: PR: ENGR 331. Basic principles of continuum fluid mechanics and transport concepts.
- ENGR 341** **3 (3,0) F,W,S,Su**
Engineering Economic Analysis: PR: ECON 201 or C.I. Economic evaluation of engineering alternatives. Time value of money and economic impact of taxes, risk, depreciation.
- ENGR 342** **3 (3,0) F,W,S,Su**
Systems Analysis: PR: MATH 324; CR: MATH 331. Introduction to mathematical analysis of linear systems. Behavior of linear systems as manifested by characteristics functions. Introduction to Laplace transforms, matrices, and state variable techniques.
- ENGR 351** **3 (3,0) F,W,S,Su**
Structure and Properties of Materials I: PR: ENGR 152 and MATH 322. Electrons and bonding, crystals, noncrystalline solids, equilibrium diagrams, non-equilibrium phase transformations, and diffusion in solids.
- ENGR 352** **3 (2,2) F,W,S,Su**
Structure and Properties of Materials II: PR: ENGR 351. Chemical, mechanical and electrical properties of materials; structure and properties of engineering alloys.
- ENGR 361** **3 (3,0) F,W,S,Su**
Engineering and the Environment: PR: ENGR 152 or equivalent. Man's inter-

action with the air, water and land environment and the role of engineering in control of this environment for the benefit of mankind.

ENGR 371 **3 (3,0) F,W,S,Su**
Probability and Statistics for Engineers: PR: MATH 323. Axioms of probability; combinatorial and geometrical probability; probability distributions; measures of location and dispersion; sampling and sampling distributions; estimation and tests of hypotheses; engineering applications. (Same as STAT 335.)

ENGR 401 **2 (2,0)**
Professionalism, Practice and Ethics: PR: Junior or Senior Standing. Study of the professional engineer's role, practice and responsibility to act in the interests of public health, safety and welfare.

ENGR 403 **3 (2,2) S**
Senior Creative Design: PR: Senior standing. Application of the fundamental engineering design algorithm to design synthesis and inventiveness methods culminating in an individual or group engineering design project.

ENGR 421 **4 (4,0) F,S**
Linear Control Systems: PR: MATH 331 and ENGR 342. Theoretical and experimental study of the dynamics of linear, lumped parameter models of mechanical, electrical, fluid, thermal and mixed systems as applied to control systems.

ENGR 431 **3 (3,0) F,W,S,Su**
Thermodynamics and Transport Processes: PR: ENGR 331; CR: ENGR 332. Consequences of the second law and combined first and second law analysis of thermodynamics systems. Introduction to heat transfer including conduction, convection, and radiation.

ENGR 442 **3 (3,0) F,W,S,Su**
Operations Research: PR: ENGR 371. Mathematical methods of operations research; linear programming, techniques of optimizations.

ENGR 443 **3 (3,0) F,W,S,Su**
Engineering Administration: PR: ENGR 341 and senior standing. Engineering organization and administration; delegation of authority and responsibility; effective utilization of resources; compensation structure, labor-management relations; selected case studies.

ENGINEERING — INTERDISCIPLINARY COURSES

ENGR 380 **3 (3,0) F,W,S**
Production Management Concepts: The evolution of concepts, processes and institutions in the management of the production function. Productivity trends and measures of performance in contemporary industrial production.

ENGR 480 **3 (3,0)**
Systems Modeling: PR: COMP 101 or equivalent. Representation of man/machine systems through analytic and computer-based models. Case studies in the analysis and improvement of systems in industry, education, and government.

ENGR 481 **3 (3,0)**
Man and Machine: The influence and interrelationship of invention and technical progress on the evolution of social forms and institutions.

ENGR 482 **3 (3,0)**
Engineering & Technology in History: Important developments in engineering and technology and their effect on society and our socio-economic processes and institutions.

ENGR 483 **3 (3,0)**
Technology and Social Change: Review of existing theories of social change, analysis of the role of technology as related to social change, and study

of contemporary events in technology and their possible impact on society.

ENGR 484 **3 (3,0)**

Science in History: Examination of the reciprocal relations of science and society from ancient to recent times.

ENGR 485 **3 (3,0)**

Topics in Urban Development: Production, distribution, and consumption of various commodities. Engineering relationships to distribution, internal structure, function of urban developments. Interrelationship of engineering, social, economic, and cultural phenomena.

ENGR 486 **3 (3,0)**

Energy and Man: Investigation of the forms of energy available, energy resources versus requirements in a technological society of increasing population problems, solutions and future predictions.

ENGR 487 **3 (3,0)**

Historical Architecture: Architecture as the realization of changing aesthetic and cultural ideals and the expression of changing forms of society. Development of understanding of our physical environment through a study of the forms, functions and determinants of architecture.

ENGR 488 **3 (3,0)**

Man and Environment: PR: C.I. A discussion of environmental factors of importance to man, man's interaction with the environment, engineering and non-engineering measures to insure improvement and maintenance of environmental quality. Not intended for engineering students.

ENGR 489 **3 (3,0)**

Computers, Cybernetics and Society: The effects of computers and the cybernetic revolution on the individual and society. Effects of positive and negative feedback on biological, technological and social systems. Computers and their interactions with human system.

ENGR 582 **3 (3,0)**

Topics in Technological Development: PR: C.I. Case studies of selected topics in the engineering and technological development of western civilization. The weight-driven clock, steam engine, electric power, radar, electronics, etc.

ENGINEERING MATHEMATICS AND COMPUTER SYSTEMS

EMCS 423 **3 (3,0)**

Mathematics Review for Engineers: Comprehensive review of college algebra, trigonometry, analytical geometry, vector calculus, and an introduction to differential equations for non-current engineering students wishing to pursue advanced work.

EMCS 430 **3 (3,0) F**

Engineering Software Design: PR: COMP 302 or equivalent; CR: MATH 331. Design theory and construction of special purpose engineering software. Survey of problem oriented programming languages.

EMCS 431 **4 (3,3) F**

Mini-Computers in Engineering Systems: PR: COMP 302 or equivalent; EECS 411 or EECS 311. Organization of the computer, processor, memory and I/O. Assembly level programming. Input-output using programmed transfer and interrupt type I/O. NOVA mini-computer orientation.

EMCS 432 **4 (3,3) W**

Real Time Mini-Computer Systems: PR: ENGR 342 and EMCS 431. Computer I/O Systems and equipment, Sampling, quantization, buffering and real time processing. Use of the NOVA mini-computer system for data acquisition, display and control.

EMCS 433 **4 (3,3) S**

Digital Systems Hardware Organization: PR: EMCS 431. Analysis of computer

subsystems and digital controllers in AHPL using techniques ranging from logic to micro programming.

- EMCS 460** **3 (3,0) F**
Optimum Seeking Methods: PR: C.I. Methods of search for the optimum of incompletely specified functions. Single and multivariable search techniques, random search, Fibonacci search, minimax concept, and gradient methods.
- EMCS 470** **3 (3,0) S**
Engineering Mathematical Systems: PR: MATH 331 and IEMS 447. The solution of differential equations generated from modeling real systems. Examples from economics, biology, engineering, et al.
- EMCS 471** **3 (3,0) W**
Engineering Mathematical Analysis: PR: MATH 324 and MATH 331. The application of mathematical methods to engineering problems including vector and tensor fields, state space techniques, orthogonal curvilinear coordinates and orthogonal functions.
- EMCS 472** **4 (4,0) F,S**
Engineering Applications of Computer Methods: PR: COMP 302 and MATH 324. Structuring engineering problems for computers including computer characteristics and performance measures. Introduction to time sharing and computer aided design.
- EMCS 530** **3 (3,0) W**
Engineering Data Reduction: PR: ENGR 371. Methods for processing and analysis of scientific test and process data, including computer filtering schemes and data compression and recovery techniques.
- EMCS 572** **3 (3,0) W**
Engineering Mathematical Analysis: EMCS 471 or C.I. The application of mathematical methods to engineering problems including linear analysis and transformations and matrix manipulation.
- EMCS 573** **3 (3,0) Su**
Analytical Methods in Engineering: PR: EMCS 471 or C.I. The kinematics and dynamics of ideal field theory. Complex potential and conformal mapping with application to problems in fluid flow, thermal, and electrical potential.
- EMCS 574** **3 (3,0) S**
Analytical Methods in Engineering: PR: EMCS 471 or C.I. Applications and solutions of partial differential equations. Concepts of mathematical modeling. Development of characteristic properties of equations and solution methods.
- EMCS 610** **4 (3,2) S**
Hybrid Computer Systems: PR: EMCS 471 or C.I. Analysis of Hybrid Systems and components. Applications of hybrid systems to problems in optimization theory, control, man-machine systems, and biological systems.
- EMCS 630** **3 (3,0) W**
Discrete System Simulation: PR: ENGR 371 or equivalent. Computer-based modeling and analysis of discrete-space, discrete-time engineering related systems. Use of FORTRAN IV and GPSS/360 for implementing such models. Laboratory assignments.
- EMCS 631** **3 (3,0) S**
Continuous System Simulation: PR: ENGR 342 or equivalent. Computer-based modeling and analysis of continuous systems. Use of state-space techniques and the CSMP/360 simulation language. Laboratory assignments.
- EMCS 632** **3 (3,0) F**
Automata Theory: PR: EECS 411 or equivalent. Structural theory and performance characteristics of the finite-state machines.
- EMCS 640** **4 (3,2) S**
Engineering Data Reduction: PR: EMCS 530. Digital analysis of multidimensional data. Applications of multidimensional orthogonal transforms.

ENGINEERING MECHANICS AND MATERIAL SCIENCES

- EMMS 411** **3 (3,0) F**
Semiconductor Materials and Devices: PR: ENGR 323 and ENGR 352. Electrical conduction in semiconductors; basic concepts of drift, diffusion, carrier generation and recombination. Physical theory and models for the junction diode and transistor.
- EMMS 412** **3 (3,0) W**
Electronic Properties of Materials: PR: ENGR 351 and PHYS 344. Electronic processes in solids. Electrical, magnetic and optical properties of solids. Electron energies in solids. Super-conducting materials.
- EMMS 413** **3 (3,0) S**
Thermodynamic Properties of Materials: PR: EMMS 433. Fundamental concepts of thermodynamics and kinetics are applied to the study of solid state phase transformations, equilibrium in multicomponent systems and diffusion in solids.
- EMMS 414** **3 (3,0) Su**
Mechanical Properties of Materials: PR: ENGR 312 and ENGR 352. Fundamentals of mechanical behavior of engineering materials. Plastic deformation, creep, fatigue, relation of microstructure to macroscopic behavior.
- EMMS 421** **3 (3,0) W**
Theory of Crystalline Solids: PR: ENGR 352. Modern theory of crystalline materials. Topics treated include crystal structure, mechanical, thermal and transport properties.
- EMMS 430** **3 (3,0) S**
Structure and Properties of Alloys: PR: ENGR 352. Application of kinetic factors and phase equilibria to behavior of ferrous and non-ferrous alloys; relation to properties to structure, composition, and environmental factors.
- EMMS 433** **3 (3,0) Su**
Physical Metallurgy: PR: ENGR 331 and EMMS 421. Principles underlying the study of diffusion, recovery and recrystallization, and solidification processes in metal systems.
- EMMS 434** **3 (2,2) F**
Experimental Techniques for Materials: PR: ENGR 352. Theoretical and experimental study of the application of optical microscopy, X-ray diffraction and electron microscopy for materials analysis.
- EMMS 435** **3 (3,0) F**
Structure and Properties of Ceramics and Polymers: PR: ENGR 352 or C.I. Structure of vitreous and crystalline non-metals; mechanical, thermal, and electrical properties of organic polymers and composite materials.
- EMMS 501** **3 (2,2) F**
Electron Microscopy of Crystalline Materials: PR: EMMS 421 or C.I. Introduction to the optics of the electron microscope, electron and electron diffraction contrast mechanisms in foils; evaluation of methods of specimen preparation.
- EMMS 502** **3 (2,2) S**
X-Ray Diffraction: PR: EMMS 421 or C.I. Properties of X-rays. Atomic arrangements in crystals and determination by X-ray diffraction. The Laue, rotating crystal, and powder methods. Applications to materials problems.
- EMMS 508** **3 (3,0) W**
Electronic Properties: PR: EMMS 412. Selected advanced topics on various aspects of electronic materials.
- EMMS 511** **3 (3,0) W**
Phase Transformation in Solids: PR: EMMS 413 and EMMS 430 or C.I. Principles of phase transformations, including precipitation, recrystallization, eutectoids, and martensite; emphasis on the understanding of the thermodynamic and kinetic processes underlying these phenomena.

- EMMS 521** **3 (3,0) S**
Corrosion: PR: EMMS 352 or C.I. Mechanisms, characteristics, types of corrosion. Evaluating corrosion resistance. Metals, ceramics, and organic materials in corrosive environments. Oxidation and other high temperature gas-metal reactions.
- EMMS 541** **4 (4,0) W**
Intermediate Mechanics of Materials: PR: ENGR 312 and MATH 331. Stress and strain at a point; failure theories; elements of plane elasticity; curved beams; bending and torsion of thin-walled structures; theory of thin plates.
- EMMS 600** **3 (3,0) F**
Physical Metallurgy: PR: EMMS 433 or C.I. Thermodynamics and kinetics of nucleation and growth reactions in metallurgical processes with special emphasis on nucleation in solids. Diffusion theory. Point, line and surface defects.
- EMMS 610** **3 (3,0) W**
Mechanical Metallurgy: PR: EMMS 414. Theoretical treatment of solid solution hardening, strain hardening, precipitation hardening. Microscopic treatment of theories of fatigue, fracture, creep. The role of dislocation interactions.
- EMMS 620** **3 (3,0) S**
Physical Ceramics: PR: EMMS 435 or C.I. Composition and structure of ceramics and glasses. Discussion of thermal conductivity, heat capacity, magnetic behavior and ferroelectric behavior with emphasis on real materials.
- EMMS 630** **3 (3,0) Su**
Polymer Science: PR: EMMS 435 or C.I. Consideration of the structure and properties of polymers from the viewpoint of materials science. Specific attention to polymerization processes, crystal structure, and mechanical properties.
- EMMS 641** **4 (4,0) S**
Theory of Elasticity: PR: EMMS 541 and EMCS 573. Tensor analysis. Stress and strain at a point. Linear elastic behavior in two and three dimensions. Energy methods. Various methods of solution for plane problems.
- EMMS 642** **4 (4,0) F**
Continuum Mechanics: PR: EMMS 312 or C.I. Tensor analysis. Lagrangian and Eulerian descriptions of deformation. Constitutive equations. Behavior of elastic solids. Body moments and couple stresses.
- EMMS 645** **3 (3,0) F**
Theory of Plasticity: PR: EMMS 641 or C.I. The ideal rigid-plastic solid. Collapse. Upper and lower bound theorems. Linear structures. Yield criteria. Characteristics. Plates.
- EMMS 646** **3 (3,0) W**
Elastic Stability: PR: EMMS 641 or C.I. Theoretical treatment of stability of structural elements. Columns. Frameworks. Thin-walled beams. Methods of Ritz, Galerkin, and Vianello-stodola.
- EMMS 652** **4 (4,0) S**
Theory of Plates and Shells: PR: EMMS 541 or C.I. Theory of bending of thin plates. Variational principles. Non-linear theory of plates. Theory of thin shells with small deformations. Various approximate theories. Stability.
- EMMS 654** **3 (3,0) F**
Dynamics of Structures: PR: EMMS 661 or C.I. Dynamic behavior of linear structures. Natural vibrations of structural systems. Damping in structures. Response to periodic and non-periodic excitations. Emphasis on matrix methods.
- EMMS 661** **3 (3,0) S**
Advanced Dynamics: ENGR 311, EMCS 471 or C.I. Dynamics of particles, distributed mass systems, and rigid bodies from an advanced viewpoint.

Virtual work principle. Lagrange's and Euler's equations of motion and Hamilton's principle.

ENGINEERING TECHNOLOGY

- ENT 303** 4 (4,0)
Problem Analysis: PR: MATH 311, MATH 312 or C.I. Applications of computational techniques to selected problems in the practice of engineering technology. Problems relating to specific option areas.
- ENT 304** 3 (3,0)
Technical Economic Analysis: PR: Junior standing. Analysis of cost elements in technical projects. Basis for comparison of alternatives. Economic analysis of technical operations.
- ENT 305** 4 (4,0) F
Applied Statics: PR: MATH 107 or Equivalent. Coplanar parallel, concurrent and nonconcurrent force systems. Noncoplanar concurrent and nonconcurrent force systems. Centroids, centers of gravity and moments of inertia of areas.
- ENT 306** 4 (4,0)
Materials and Processes: PR: MATH 110 and MATH 111 or equivalent. Relation between structure and properties of metals, wood, ceramics and polymers. Testing and inspection, casting, forming and working of metals, heat treatment, and joining.
- ENT 307** 4 (4,0) F
Applied Fluid Mechanics: PR: Basic Physics Course and Junior Standing. Application of principles of fluid mechanics. Properties of fluids, forces, and fundamentals of fluid flow. Special attention to pipes, pumps, and other equipment.
- ENT 321** 5 (5,0)
Electronic Circuits: PR: MATH 311 and basic electrical circuit theory. Introduction to graphical and analytical analysis of electronic circuits. Amplifiers, feedback networks and power supplies.
- ENT 322** 4 (3,3)
Digital Circuits: Operations and application of digital circuits. Laboratory.
- ENT 331** 3 (3,0)
Hydraulics and Hydrology: PR: Junior standing. Applied hydraulics and hydrology including topics in closed and open channel flow, rainfall, runoff, seepage, ground water, storage and impoundments, wells, etc.
- ENT 332** 3 (3,0)
Water Supply Systems: Fundamental techniques applicable to technical projects dealing with water resources, hydrology, water treatment, transmission and distribution.
- ENT 333** 3 (3,0)
Wastewater Systems: Fundamental techniques applicable to technical projects dealing with collection and transmission of wastewater, treatment of wastewater, handling and disposal of effluent and sludge.
- ENT 341** 3 (3,0)
Contracts and Specifications: Study of basic legal principles involved in contractual provisions and interrelationships with applicable specifications and the application of such principles.
- ENT 343** 4 (3,3)
Product Design: Principles of layout and dimensioning for production. Consideration of design factors, standards, specifications and codes with emphasis on productivity.
- ENT 351** 3 (3,0)
Work Analysis: PR: Junior standing. Analysis of work elements in technical projects. Work simplification and methods improvements in technical operations.

- ENT 352** **3 (3,0)**
Cost Estimation and Analysis: Determination and analysis of cost of manufacturing and construction operations including applicable indirect costs. Costs of all applicable work materials and services are included.
- ENT 353** **3 (3,0)**
Computer Methods in Industry: PR: COMP 102. An overview of industrial EDP applications. Includes data processing concepts, functions of the computer, and applications in data processing, process and machine control.
- ENT 401** **5 (4,2)**
Electricity and Electronics: Electricity and magnetism, applications of the basic principles of electric circuits, electronic amplifiers.
- ENT 402** **4 (4,0)**
Strength of Materials: PR: ENT 305 or C.I. Relationship between external forces and action of members of a structure. Topics include stress and strain, torsion, beams, columns, stress concentrations and fatigue.
- ENT 403** **4 (4,0) W**
Applied Thermodynamics: PR: MATH 312, ENT 405. Introduction to concepts of energy, work, and heat; thermodynamic properties and processes; basic laws; cycle efficiency; flow through orifices and nozzles; empirical design formulae.
- ENT 405** **4 (4,0)**
Applied Dynamics: PR: MATH 312 and ENT 305. Basic principles of dynamics. Kinematics and kinetics of rectilinear motion and rotation. Work, energy, power, impulse, momentum and impact.
- ENT 421** **3 (3,0)**
Computer Systems: PR: ENT 322. The hardware organization of process control and special purpose digital computers. Peripherals and programming techniques.
- ENT 422** **3 (3,0)**
Antennas and Propagation: PR: ENT 321. Study of the basic theory and technology used in high frequency transmission lines and waveguides, propagation and radiation, antennas.
- ENT 423** **3 (3,0)**
Feedback Control: PR: ENT 321. Feedback control system analysis and design techniques, control system components, and applications to practical control systems.
- ENT 424** **3 (3,0)**
Communications Systems: PR: ENT 321. The principles of oscillators, noise, symmetrical circuits, modulation and demodulation, pulse and ramp circuits.
- ENT 431** **3 (3,0)**
Treatment Plant Analyses and Control: Basic techniques applicable to lab analyses, control measures, and overall operation of water and wastewater treatment plants.
- ENT 432** **3 (3,0)**
Environmental Sampling and Analyses: Fundamental techniques applicable to sampling and performing lab analyses of our physical environment, including air, water and land. Interrelation and analysis of results.
- ENT 433** **3 (3,0)**
Air Pollution Control: Fundamental Techniques applicable to analyzing composition and sources of pollutants, measuring concentrations, and controlling emissions. Aid pollution control programs, laws, rules, and regulations.
- ENT 434** **3 (3,0)**
Solid Waste Management: Fundamental techniques applicable to technical projects involving solid waste composition, collection and disposal. Solid wastes programs, laws, rules, and regulations.

- ENT 441** 4 (3,2)
Structural Design: PR: ENT 342 and ENT 402. Design of mechanical and structural elements. Strength, fatigue, safety factors and code requirements.
- ENT 442** 3 (3,0)
Design Integration: PR: ENT 343. Project design involving planning, control, prototype construction, testing and evaluation.
- ENT 443** 3 (3,0)
Senior Project: PR: ENT 442. Individual project involving product conception, design, development, construction, and testing. A final technical report is required of each student.
- ENT 444** 4 (3,2)
Electro-Mechanical Design: PR: ENT 405 and ENT 401. Masses, motions, kinematics and dynamics of machinery.
- ENT 451** 3 (3,0)
Process Planning and Scheduling: Planning and control of specific tasks, and manhours related thereto. Includes description and application of techniques used in construction and manufacturing industries.
- ENT 452** 3 (3,0)
Occupational Safety: Accident prevention and the operation of an industrial safety program. Basic requirements of the Occupational Safety and Health Act standards.
- ENT 453** 3 (3,0)
Industrial Quality Control: Basic concepts and practices in industrial quality control. Technical specifications, measurement standards, inspection, and gaging. Process control techniques.
- ENT 454** 3 (3,0)
Plant Maintenance Operation: Organization of the maintenance function in manufacturing and service industries. Maintenance planning and scheduling analysis of required and preventive maintenance operations, including economic trade-offs.

ENGLISH

- ENG 100** 2 (2,0) F,W,S,
Vocabulary Study: A word skills course for students wishing to improve their vocabulary.
- ENG 101** 4 (4,0) F,W,S,Su
Composition I: Expository writing with emphasis on effective communication. Writing topics to be based on selected readings.
- ENG 103** 3 (3,0) F,W,S,Su
Exploring Literature Through Writing: PR: ENG 101 or equivalent. Writing practice based on readings in contemporary prose and poetry selected to invite the interest of students in literature.
- Note on Freshman English Program:**
 ENG 101 and 103 may be taken to satisfy the State Department requirement for certification in secondary school teaching or for transfer to colleges that require one full year of Freshman English. Students who intend to major in English, English Education, or Library Science must take ENG 103. English, Education and Library Science majors must complete ENG 103 before enrolling in any English courses numbered above 103 with the exception of ENG 301.
- ENG 105** (2,2) F,W,S,Su
Grammar Review: A systematic review of basic English grammar to improve clarity and accuracy of writing.
- ENG 201** 4 (4,0) F,W,S
Literature of Modern Man: Reading and discussion of types and forms of modern literature. Satisfies the requirement (II) of the cultural and historical

foundation in the Environmental Studies Program.

- ENG 202** **3 (3,0) F,W,S**
Literary Analysis: Analysis of fiction, drama, and verse in terms of major elements: plot, conflict, characterization, viewpoint, rhetorical and poetic devices, figurative language, meter, rhyme, verse forms.
- ENG 208** **3 (3,0) F,W,S**
Principles of Creative Writing: An exploratory course in the several types of creative writing; group analysis of original writing; critical reading of established authors.
- ENG 209** **3 (3,0)**
Introduction to Verse Writing: Practice in writing poetry; group analysis and criticism of work produced by individual students.
- ENG 210** **3 (3,0)**
Introduction to Fiction Writing: Practice in writing the short story; group analysis and criticism of work produced by individual students.
- ENG 211** **3 (3,0) F,Su**
Survey of English Literature to 1625
- ENG 212** **3 (3,0) F,W**
Survey of English Literature, 1626-1798
- ENG 213** **3 (3,0) W,S**
Survey of English Literature, 1798-1914
- ENG 300** **1 (1,0) F,W,S,Su**
Composition For Accountants: Writing exercises for students majoring in Accountancy and planning to take the CPA examination.
- ENG 301** **3 (3,0) F,W,S,Su**
Professional Reporting Writing I: Emphasis on clear expository writing of memoranda, reports and articles in the student's particular field.
- ENG 302** **3 (3,0) F**
Creative Writing Workshop I: PR: C.I. Practice in established forms: essay, short story, and poetry.
- ENG 303** **3 (3,0) W**
Creative Writing Workshop II: PR: ENG 302 or C.I. Individualized practice in writing in one of the established forms; analytic study of the work of pertinent authors.
- ENG 304** **3 (3,0) S**
Creative Writing Workshop III: PR: ENG 303 or C.I. Individualized practice in writing in one of the established forms; analytic study of the work of pertinent authors.
- ENG 305** **3 (3,0) S**
Structure of Verse: Intensive study of the structural characteristics of English poetry, metrical systems, rhyme, scansion, and poetic rhetorical devices.
- ENG 306** **3 (3,0)**
Writing for Children: Practice in writing publishable literature for pre-school and elementary level children.
- ENG 307** **4 (4,0) F**
Writing Skills: Intensive practice in description, narration, exposition and argumentation; control of tone, mood, viewpoint, and level of diction. Applicable to article, essay, and short-story writing.
- ENG 308** **4 (4,0) W**
Magazine Writing I: PR: ENG 307 or C.I. Structure and organization of articles, essays, profiles, and reviews; market analysis; data gathering.
- ENG 309** **4 (4,0)**
Magazine Writing II: PR: ENG 308. Continuation of ENG 308.

- ENG 310** **3 (3,0) F,W,S,Su**
Professional Report Writing II: Instruction and practice in scientific writing including preparation of scientific reports in the student's particular field.
- ENG 311** **3 (3,0) F,Su**
Survey of American Literature, 1588-1865
- ENG 312** **3 (3,0) F,W**
Survey of American Literature, 1865-1914
- ENG 313** **3 (3,0) W,S**
Survey of American Literature Since 1914
- ENG 314** **3 (3,0) F,W**
Survey of British Literature Since 1914
- ENG 316** **3 (3,0)**
Continental European Fiction Since 1900: A selection of significant works of fiction written in various languages during the present century, read in translation.
- ENG 317** **4 (4,0) F**
World Literature I: Poetry, prose, and drama selected from ancient Hebrew, Greek, and Oriental literature and from that of Renaissance Europe.
- ENG 318** **4 (4,0) W**
World Literature II: Readings from Moliere, Voltaire, Goethe, Pushkin, Balzac, Tolstoy, Ibsen, Mann, Kafka, Camus, and others.
- ENG 320** **4 (4,0)**
Women in Literature: An investigation of attitudes toward women in literature. Selections from Shakespeare, Eliot, Flaubert, Ibsen, Freud, Lawrence, Hemingway, Albee, Freidan, Millet, Greer, and Steinem.
- ENG 321** **3 (3,0) S**
Exploring Poetry: A broad cultural approach to poetry, with emphasis upon the major themes and preoccupations of poets of all ages. Students from all disciplines are welcome.
- ENG 325** **3 (3,0)**
Science Fiction: An investigation of science fiction as a literary form, together with selected readings.
- ENG 361** **3 (3,0) S**
Practical Criticism: Student evaluation of selected fiction, poetry, and drama through practical exercises in literary criticism.
- ENG 371** **3 (3,0)**
Principles of Linguistics: An overview of the modern linguist's approach to language. Analytic methods of phonology, morphology, syntax. Brief systematic survey of dialectology, language acquisition and semantics.
- ENG 400** **3 (3,0)**
Writing About Literature: Supplies background for recognizing literary allusions and technical terms, assures acquaintance with professional literary journals, and provides supervision of student critical writing.
- ENG 401** **3 (3,0) F**
Writing Practicum I: PR: C.I. Intensive writing practice in fiction, non-fiction, or verse.
- ENG 402** **3 (3,0) W**
Writing Practicum II: PR: ENG 401. Continuation of ENG 401.
- ENG 403** **3 (3,0) S**
Writing Practicum III: PR: ENG 402. Continuation of ENG 402.
- ENG 404** **3 (3,0)**
Writing Fiction I: PR: Evidence of writing skill satisfactory to the instructor. Analysis of significant fiction; market research; intensive writing practice leading to a completed body of fiction writing suitable for publication.

- ENG 410** **3 (3,0)**
Ethnic Literature in America: Contributions of linguistic and ethnic groups of non-English origin to the literature of the United States.
- ENG 415** **3 (3,0) F,W**
Readings in Shakespeare: Reading and analysis of a selected group of comedies, histories, and tragedies for English Education majors.
- ENG 430** **3 (3,0)**
Chaucer: *The Canterbury Tales*, *Troilus and Criseyde*, and other works.
- ENG 434** **3 (3,0)**
Milton: *Paradise Lost*, *Paradise Regained*, *Samson Agonistes*, shorter poems and selected prose.
- ENG 439** **3 (3,0) Even Yrs.**
Renaissance Studies: Reading, analysis and discussion of literature in English: 1588-1660. May be repeated for credit.
- ENG 440** **3 (3,0) Odd Yrs.**
18th Century Studies: Reading, analysis, and discussion of literature in English: 1660-1800. May be repeated for credit.
- ENG 441** **3 (3,0) Even Yrs.**
19th Century Studies: Reading, analysis, and discussion of literature in English: 1800-1914. May be repeated for credit.
- ENG 442** **3 (3,0) Odd Yrs.**
Shakespeare Studies: Reading, analysis, and discussion of Shakespeare's plays. May be repeated for credit.
- ENG 443** **3 (3,0) Odd Yrs.**
Drama Studies: Reading, analysis, and discussion of drama in English (excluding Shakespeare). May be repeated for credit.
- ENG 444** **3 (3,0)**
The British Novel in the 18th Century
- ENG 445** **3 (3,0)**
The British Novel in the 19th Century
- ENG 446** **3 (3,0)**
The American Novel in the 19th Century
- ENG 451** **3 (3,0)**
British and American Fiction Since 1900
- ENG 452** **3 (3,0)**
British and American Poetry Since 1900
- ENG 453** **3 (3,0)**
British and American Drama Since 1900
- ENG 460** **3 (3,0)**
Historical Survey of Literary Criticism: Study of the major critics from classical antiquity through the modern era.
- ENG 471** **3 (3,0) F**
Modern English Grammar: Methods in the study of modern English grammar. Emphasis upon the analysis and comparison of traditional, structural, and transformational grammar.
- ENG 472** **4 (4,0) S**
History of the English Language: Study of the English language and its development from Anglo-Saxon to Modern.
- ENG 473** **3 (3,0) W**
Transformational Grammar: PR: ENG 471. Introduction to philosophical basis of transformational grammar. Students will develop grammar for modern English.
- ENG 483** **3 (3,0)**
Black English: A study of the phonology, morphology, and syntax of Black

English. Provides an understanding of the implications of Black English in contemporary society.

- ENG 501** 4 (4,0)
Linguistics: Modern linguistic theories and studies focusing on language acquisition and development, contemporary American English, semantics, and paralinguistics.
- ENG 508** 4 (4,0)
Rhetoric and Literature: Investigates the development of written strategies of persuasion. Traces their relation to practical and imaginative literature. Applications to classroom teaching of literature and composition.
- ENG 520** 4 (4,0)
Studies in Contemporary Fiction: Fiction of the last 20 years in the United States and Britain.
- ENG 521** 4 (4,0)
English Renaissance Literature I: Elizabethan poetry and prose, 1588-1603.
- ENG 522** 4 (4,0)
English Renaissance Literature II: Jacobean and Caroline poetry and prose, 1603-1642.
- ENG 523** 4 (4,0)
English Renaissance Literature III: Commonwealth poetry and prose, 1642-1660, including Milton.
- ENG 524** 4 (4,0)
Studies in Restoration English Literature: Literature of the Restoration.
- ENG 525** 4 (4,0)
English Literature 1700-1745: Prose and poetry of the first half of the 18th. Century.
- ENG 526** 4 (4,0)
English Literature, 1745-1798: Prose and poetry of the last half of the 18th. Century.
- ENG 527** 4 (4,0)
The Romantic Revolt (19th. Century Literature): The romantic revolt in poetry and prose: English, American, and Continental literature, 1798-1832.
- ENG 528** 4 (4,0)
Doubt and Belief (19th. Century Literature): English, American, and Continental literature, 1832-1870.
- ENG 529** 4 (4,0)
Decadence and Renewal (19th. Century Literature): English, American, and Continental literature, 1870-1914.
- ENG 531** 4 (4,0)
Shakespeare's Comedies
- ENG 532** 4 (4,0)
Shakespeare's Histories
- ENG 533** 4 (4,0)
Shakespeare's Tragedies
- ENG 541** 4 (4,0)
English Drama to 1642 (exclusive of Shakespeare)
- ENG 542** 4 (4,0)
Restoration and 18th. Century English Drama
- ENG 561** 4 (4,0)
Use and Enjoyment: Criticism from Plato to Johnson.
- ENG 562** 4 (4,0)
Modern Theories of Literature: Criticism since 1800.

- ENG 610** **4 (4,0)**
Literary Genres: Provenance, structure and critical problems in a specific genre such as tragedy, the epic, the novel, or the lyric.
- ENG 620** **4 (4,0)**
World Literature: The study of the influence on British and American literature of selected foreign works read in translation.
- ENG 630** **4 (4,0)**
Movements in Literature: Study of a movement such as naturalism, romanticism, or classicism, or a pervasive idea such as the absurd.
- ENG 640** **4 (4,0)**
Problems in Linguistics: PR: ENG 501. In-depth study of the application of linguistics to various aspects of teaching and communication.
- ENG 650** **4 (4,0)**
Major Literary Authors: Study of a single author or of two or three associated literary authors, with emphasis on biography, bibliography, and style.
- ENG 660** **4 (4,0)**
Media and Popular Literature: Study of the literary content of contemporary media; popular fictions, such as science fiction, detective fiction, and historical fiction. Application to classroom teaching.
- ENG 680** **4 (4,0)**
Practicum: The Teaching of Literature: Close work with an experienced instructor in teaching an undergraduate literature course, combined with regular group meetings for discussion of problems of teaching literature.
- ENG 685** **4 (4,0)**
Practicum: The Teaching of Composition: Close work with an experienced instructor in teaching an undergraduate composition course, combined with regular group meetings for discussion of problems of teaching composition.

ENVIRONMENTAL STUDIES PHYSICAL EDUCATION

The Environmental Studies Physical Education Program is designed to enhance the physical and mental development of the student. A student may receive three quarter hours credit toward graduation by enrolling and satisfactorily completing any one of the following courses:

- ESPE 301** **3 (2,2) F,S,Su**
Aquatics: A study and application of the physiological benefits of basic aquatic developmental skills — elementary and advanced strokes, water safety, springboard diving, and interval training.
- ESPE 302** **3 (2,2) F,W,S,Su**
Body Development: A study and application of the metabolic, neuromuscular, and cardiovascular changes resulting from select physical activities.
- ESPE 304** **3 (2,2) F,W,S,Su**
Golf: A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carry-over activity.
- ESPE 305** **3 (2,2) F,W,S,Su**
Tennis: A study of performance and application in basic and advanced skills, rules, and etiquette. Physiological and social values accruing from this carry-over activity.
- ESPE 306** **3 (2,2) S,Su**
Life Saving: Instruction, training and certification in basic life saving swimming skills.
- ESPE 307** **3 (2,2) Su**
Scuba Diving: Instruction, training and certification in basic diving skills with

self-contained underwater breathing apparatus. Students may be required to supply their own equipment.

ESPE 308

3 (2,2) W,Su

Interpretive Dance: Instruction and analysis of creative dance performance as an art form.

ESPE 483

3 (3,0) F,W,S,Su

Actualization of Physical Potential in Contemporary Living: Factors underlying physical potential. Self physical assessment, values of physical activity, self-improvement, contemporary problems, body awareness, body mechanics, family responsibilities. Development of individual program.



F

FINANCE

- FIN 300** **3 (3,0) F,W,S**
Personal Investments: PR: Junior Standing. Study of the fundamentals of managing and investing one's money. Topics include: budgeting, home ownership, insurance, stocks and bonds. Course satisfies Advance Environmental Studies requirement.
- FIN 301** **5 (5,0) F,W,S,Su**
Finance: PR: ACCY 212 or ACCY 300, and ECON 203. Fundamentals of obtaining and administering funds to meet short-term and long-term capital requirements.
- FIN 311** **4 (4,0)**
Risk and Insurance: PR: Junior Standing or C.I. Principles and methods of risk reduction and specialization, with particular emphasis on insurance.
- FIN 321** **4 (4,0)**
Investments: PR: FIN 301 or C.I. Principles of determining investment policy for individual institutional portfolios.
- FIN 331** **4 (4,0) F,W,S,Su**
Money and Banking: PR: ECON 203 or C.I. The nature of money, the functioning of the commercial banking system and its relation to the level of economic activity, and the activities of the Federal Reserve System and Treasury.
- FIN 341** **4 (4,0)**
Real Estate: PR: Junior standing. Basic principles of real estate ownership, its use and transfer, brokerage, management, legislation, and importance to the economy.
- FIN 351** **4 (4,0) F,W,S,Su**
Financial Institutions: PR: FIN 301. The operation of financial institutions and an analysis of their role in the economy.
- FIN 352** **4 (4,0) W**
Commercial Bank Administration: PR: FIN 301, FIN 351. Administrative areas of a commercial bank including operations, management of bank assets and liabilities, lending policies, trust & fiduciary activities, and regulatory aspects.
- FIN 361** **4 (4,0) F,W,S**
Financial Models: PR: FIN 301, ECON 321. Mathematical models applied specifically to financial problems including those models suitable for representation and manipulation of computers.
- FIN 421** **4 (4,0)**
Security Analysis: PR: FIN 301 and FIN 321. The problems of selecting securities for various investment purposes.
- FIN 431** **4 (4,0) F,S**
Financial Management: PR: FIN 301. Case studies dealing with business financial management problems and current issues.
- FIN 461** **4 (4,0) W,Su**
Portfolio Management: PR: FIN 301. The management of security and asset portfolios with emphasis on portfolio selection and management using basic techniques derived from portfolio theory.
- FIN 501** **4 (4,0) F,S**
Financial Concepts: PR: Acceptance into the graduate program, ACCY 501 and ECON 501 or equivalents. Effects of financial decisions upon the firm, interrelationships of these effects, and alternatives available to financial managers in meeting financing needs of the firm.
- FIN 601** **3 (3,0)**
Capital Management and Analysis: PR: Graduate standing and FIN 501 or

equivalent. Financial planning, valuation, sources of long-term capital, concepts of cost of capital and capital budgeting.

FIN 611

3 (3,0)

Financial Management of Current Operations: PR: Graduate standing and FIN 501 or equivalent. Management of current assets and current liabilities. Special problems associated with expansion, contraction, merger and failure.

FIN 631

3 (3,0)

Analysis of Investment Opportunities: PR: Graduate standing and FIN 501 or equivalent. Techniques for evaluating securities, investment decision making, and portfolio management.

FOREIGN LANGUAGES

FL 323

4 (4,0)

Comparative World Literature I: Masterworks of world literature in translation from the Book of Job to Cervantes. Authors include Homer, Sophocles, Cicero, Virgil, St. Augustine, Dante, Chaucer, Montaigne and Shakespeare.

FL 324

4 (4,0)

Comparative World Literature II: Continuation of FL 323, Renaissance to 20th Century, including Pascal, Milton, Rousseau, Goethe, Wordsworth, Poe, Balzac, Chekov, Baudelaire, Yeats, Mann, and Camus. Need not be taken in sequence with FL 323.

FORENSIC SCIENCE

FSC 300

4 (4,0)

Introduction to Forensic Science: Intended for nonmajors to provide an appreciation for the ways in which science serves the civil and criminal justice system.

FSC 301

4 (2,6)

Criminalistics I: PR: CHEM 263 or C.I. Examination and evaluation of evidence obtained from suspect criminal actions, including the microscopy of trace evidence.

FSC 302

4 (2,6)

Criminalistics II: PR: FSC 301. Continuation of FSC 301.

FSC 305

4 (2,6)

Civilistics: PR: FSC 301. Examination and evaluation of evidence obtained from suspect civil actions involving water and air pollution, public safety, and product design.

FSC 356

4 (2,6)

Forensic Analysis Techniques: PR: CHEM 352. Study of separation, purification, quantitative, and instrumental techniques in drug and narcotic analysis toxicology, blood factor, and enzyme identification.

FSC 470

4 (0,40)

Forensic Science Internship: PR: C.I. Credit for full-time work (10-12 Weeks) in a professional forensic laboratory. This course may be repeated for credit.

FRENCH

FRE 100

1 (1,0)

French Diction: This course is especially designed for music and voice students with an emphasis on musical terms, French songs and opera libretti.

FRE 101

4 (4,1) F

Elementary French Language and Civilization: Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to French culture.

- FRE 102** **4 (4,1) W**
Elementary French Language and Civilization: PR: FRE 101 or equivalent.
 Continuation of FRE 101.
- FRE 103** **4 (4,1) S**
Elementary French Language and Civilization: PR: FRE 102 or equivalent.
 Continuation of FRE 102.
- FRE 201** **4 (4,1) F**
Intermediate French Language and Civilization: PR: FRE 103 or equivalent.
 Development of language skills at the intermediate level, review of grammar, study of syntax, idiomatic expressions, study of French culture.
- FRE 202** **4 (4,1) W**
Intermediate French Language and Civilization: PR: FRE 201 or equivalent.
 Continuation of FRE 201.
- FRE 203** **4 (4,1) S**
Intermediate French Language and Civilization: PR: FRE 202 or equivalent.
 Continuation of FRE 202 with greater emphasis on French civilization from the Middle Ages to the present.
- FRE 301** **4 (4,1) F**
French Conversation: PR: FRE 203 or equivalent. Development of skills in conversation and comprehension. This course may be repeated for credit. When repeated, credit will apply to general electives only.
- FRE 303** **4 (4,0)**
French Composition: PR: FRE 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.
- FRE 311** **4 (4,0) F**
Survey of French Literature I: PR: FRE 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance.
- FRE 312** **4 (4,0) W**
Survey of French Literature II: PR: FRE 203 or equivalent. Main literary currents and works of the seventeenth and eighteenth centuries.
- FRE 313** **4 (4,0) S**
Survey of French Literature III: PR: FRE 203 or equivalent. Main literary currents and works of the nineteenth and twentieth centuries.
- FRE 321** **4 (4,0)**
Short Stories of 18th, 19th and 20th Centuries: PR: FRE 203 or equivalent. Selected readings designed to increase reading speed and develop analytical abilities. Authors include: Voltaire, Maupassant, Flaubert, Camus and others.
- FRE 401** **4 (4,0)**
French Phonetics and Diction: PR: FRE 303 or equivalent. French phonology with emphasis on phonic groupings.
- FRE 402** **4 (4,0)**
Advanced French Conversation: PR: FRE 301. Advanced conversation on directed topics from various disciplines: Literature, art, psychology, philosophy, music, business and the sciences.
- FRE 403** **4 (4,0)**
Advanced French Composition: PR: FRE 303. Readings and written imitations of modern literary styles in the form of themes, sketches, poems and original stories.
- FRE 422** **4 (4,0)**
Seventeenth Century French Theater: PR: FRE 312. Corneille, Racine, and Moliere. A study of the lives and principal works of the authors.
- FRE 431** **4 (4,0)**
French Literature of the Eighteenth Century: PR: FRE 312. The philosophical movement: Montesquieu, Vauvenargues, Voltaire, Diderot, Buffon.

- FRE 441** 4 (4,0)
Romantic Poetry and Drama: PR: FRE 312. Great poets and dramatists of the Romantic Movement: Hugo, Lamartine, Vigny, Musset and others.
- FRE 442** 4 (4,0)
The Romantic Novel: PR: FRE 312. A study of several novels of the early nineteenth century which characterizes the Romantic movement.
- FRE 443** 4 (4,0)
Nineteenth Century French Literature: PR: FRE 313. Realism and naturalism.
- FRE 444** 4 (4,0)
Nineteenth Century French Literature: PR: FRE 313. Parnassianism and symbolism.
- FRE 451** 4 (4,0)
Twentieth Century French Literature: Contemporary French drama and poetry.
- FRE 453** 4 (4,0)
Twentieth Century French Literature: PR: FRE 313. Contemporary French novel.
- FRE 481** 4 (4,0)
Stylistics: PR: FRE 301 or equivalent. An intense study of textual criticism. An examination of the relationship between language and literature; explications and linguistic analysis of literary texts.

G

GEOGRAPHY, PHYSICAL

- GEOG 100** 4 (4,0)
Physical Geography: Basic physical elements of geography including climate, landforms, soils, natural vegetation, minerals and their integrated patterns of world distribution.
- GEOG 301** 3 (3,0)
Resources Geography: Analysis of basic principles and problems associated with development, use, conservation, and management of natural resources with special emphasis on the United States.

GEOGRAPHY, SOCIAL

- GEOG 350** 4 (4,0)
Urban Geography: The city as a geographical phenomenon created by human effort, its historical development; patterns of land use as related to economic, sociological and political influences. (Same as PAD 324).
- GEOG 360** 4 (4,0)
World Political Geography: Analysis of the types and distributions of political systems, review of factors which affect relative power of diverse politics, areas of conflict and arbitration. (Same as PCL 322).

GEOLOGY

- GEOL 100** 4 (4,0) F,W
Geology and Its Applications: Survey of geologic applications and hazards including: gemstones, geothermal energy, fossil fuels, groundwater, sinkhole, beach erosion, landslides, earthquakes, "tidal" waves, volcanism. Appropriate for Environmental Studies.
- GEOL 105** 4 (4,0) S
Historical Geology: Lunar and planetary histories, evolution of earth's crust including drifting continents and mountain building, evolution of life as reconstructed from fossils. Appropriate for Environmental Studies.

GEOL 201**4 (2,4) W**

Physical Geology: PR: GEOL 100. Geologic principles and recent theories developed in some depth with the aid of rock and mineral samples and geologic maps.

GEOL 487**3 (3,0)**

Geology of Our National Parks and Monuments: Unique geologic features preserved in our national park system and the processes that gave rise to these features. Meets advanced ESP requirements: designed for non-majors.

GERMAN**GER 100****1 (0,1)**

German Diction: This course is especially designed for music and voice students with an emphasis on musical terms. German songs and opera libretti.

GER 101**4 (4,1) F**

Elementary German Language and Civilization: Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to German culture.

GER 102**4 (4,1) W**

Elementary German Language and Civilization: PR: GER 101 or equivalent. Continuation of GER 101.

GER 103**4 (4,1) S**

Elementary German Language and Civilization: PR: GER 102 or equivalent. Continuation of GER 102.

GER 201**4 (4,1) F**

Intermediate German Language and Civilization: PR: GER 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of German culture.

GER 202**4 (4,1) W**

Intermediate German Language and Civilization: PR: GER 201 or equivalent. Continuation of GER 201.

GER 203**4 (4,1) S**

Intermediate German Language and Civilization: PR: GER 202 or equivalent. Continuation of GER 202 with greater emphasis on German civilization from the Middle Ages to the present.

GER 301**4 (4,0)**

German Conversation: PR: GER 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.

GER 303**4 (4,0)**

German Composition: PR: GER 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

GER 311**4 (4,0)**

Survey of German Literature I: PR: GER 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance and Baroque.

GER 312**4 (4,0)**

Survey of German Literature II: PR: GER 203 or equivalent. Main literary currents and works of the 17th and 18th centuries.

GER 313**4 (4,0)**

Survey of German Literature III: PR: GER 203 or equivalent. Main literary currents and works of the 19th and 20th centuries.

GER 321**4 (4,0)**

Short Story: PR: GER 203 or equivalent. German short prose works of the 19th and 20th centuries.

H

HISTORY

- HIST 201** 4 (4,0) F,W,S
Western Culture and Civilization I: Rise of culture and civilization in the West from earliest times to the eve of the Renaissance.
- HIST 202** 4 (4,0) F,W,S
Western Culture and Civilization II: Continuation of HIST 201. Europe from its feudalmanorial state through the Napoleonic era.
- HIST 203** 4 (4,0) F,W,S
Western Culture and Civilization III: Continuation of HIST 202. The Romantic era, the influence of liberalism, nationalism, and modern industrialism upon political, social, economic, and intellectual life.
- HIST 210** 4 (4,0)
Introduction to Anglo-American Law; An historical survey of the development of the principles and processes of the American law from its origins in English common law to the present. (Same as LES 204).
- HIST 301** 4 (4,0)
Age of Transition: A survey of social, economic, political, religious, and cultural developments in Europe from the fall of Rome to the 10th century. (Formerly HIST 353).
- HIST 302** 4 (4,0)
Medieval Society and Civilization: A survey of social, economic, political, religious, and cultural developments in Europe from the 10th to the 13th centuries. (Formerly HIST 354)
- HIST 303** 4 (4,0)
Italian Renaissance
- HIST 304** 4 (4,0)
Protestant and Catholic Reformation.
- HIST 305** 4 (4,0)
Enlightenment and Religious Revival: Science and political absolutism; the Enlightenment and the *philosophies*: secularism, cosmopolitanism and humanitarianism; the French Revolution; religious revival, and the beginning of romanticism. (Formerly HIST 301).
- HIST 306** 4 (4,0)
Age of Revolution and Napoleon: Cause and course of the revolution; the rise and fall of Napoleon; impact on the thought and action of Western Europe. (Formerly HIST 457).
- HIST 307** 4 (4,0)
Romanticism and Realism: Napoleon and nationalism; new ideas: conservation; liberalism, romanticism, republicanism and socialism; urbanization, technology and mass culture; religious decline; *Realpolitik*, racism, imperialism and militarism. (Formerly HIST 302).
- HIST 308** 4 (4,0)
The Rise of Mass Culture and Democracy, 1890-1930: Europe in the era of modern technology, militarism, the First World War, Paris Peace Conference, popular culture, and new democratic institution east of the Rhine. (Formerly HIST 445).
- HIST 309** 4 (4,0)
Second World War and Rebirth of Europe: Origins of World War II; Hitler's "New Order," and resistance movements; Cold War; de-Stalinization in Russia; Sovietization of East Central Europe; Western reconstruction, and prosperity. (Formerly HIST 447).

- HIST 311** **4 (4,0) F,W,S**
American Economic History: An introduction to the economic development of the United States with emphasis upon agriculture, labor, industrialization, transportation, and banking. (Same as ECON 307).
- HIST 312** **4 (4,0) F,W,S**
American Political History: An introduction to political life in the United States with emphasis upon the three branches of government, political parties, and the federal system.
- HIST 313** **4 (4,0) F,W,S**
American Social History: An introduction to the effect of social change on Americans and their political institutions. Emphasis is placed on demographic, sexual and technological change.
- HIST 320** **4 (4,0)**
The Changing Frontier in American History: A survey of the types and geographic settings of the frontiers. Attention given to the impact of the frontier on American History.
- HIST 322** **4 (4,0)**
U.S. Constitutional History I: Development of the constitutional system and the idea of Constitutionalism from the colonial emphasis on written contracts and natural law through "nullification" and Civil War.
- HIST 323** **4 (4,0)**
U.S. Constitutional History II: Post-war constitutional changes; the curious role of the 14th amendment; expansion of national power over the economy and civil rights; increasing popular belief in "Constitutionalism."
- HIST 324** **4 (4,0)**
Black American History: History of Negroes from their African heritage through American Slavery to freedom and their role in 20th. Century America.
- HIST 326** **4 (4,0)**
History of Florida to 1845
- HIST 327** **4 (4,0)**
Florida History 1845 - Present
- HIST 328** **4 (4,0) W**
History of the South to 1865: Development of the southern colonies, beginning of sectionalism, the cotton economy, slavery, Calhoun's constitutional theories, secession, Civil War and its aftermath.
- HIST 329** **4 (4,0) S**
History of the South Since 1865: Reconstruction, the "solid South" and the racial dilemma, progressivism for whites only, southern literature, 20th century economic, political, and social changes, and the new Reconstruction.
- HIST 330** **4 (4,0) F**
Latin American History: The Colonial Period: A survey course in Latin American History to the beginning of the Wars of Independence in 1810.
- HIST 331** **4 (4,0) W**
Latin American History: The 19th Century: Continuation of HIST 330.
- HIST 332** **4 (4,0) S**
Latin American History: The 20th Century: Continuation of HIST 331.
- HIST 333** **4 (4,0)**
Spanish Borderlands: Survey of Spanish settlement in South and South-western U.S. with emphasis upon cultural conflicts found in the imperial rivalries for control of the area.
- HIST 340** **4 (4,0)**
Modern Middle East
- HIST 351** **4 (4,0)**
The Classical World: Greece: History and culture of Greece from the Minoan-

Mycenaean to the Hellenistic age, with emphasis on contributions in art, literature and philosophy. (Same as HUM 351).

HIST 352 **4 (4,0)**

The Classical World: Rome: History and culture of Rome from the Etruscan Period to the dissolution of the empire, with emphasis on contributions in architecture, law and literature. (Same as HUM 352).

HIST 355 **4 (4,0)**

Renaissance and Reformation: The influence of Renaissance humanism on arts, letters, and politics; Luther and Protestantism; the Catholic Counter-Reformation and the Thirty Years' War.

HIST 370 **4 (4,0)**

Survey of East Asia: An introduction to Far Eastern Cultures including India since the Age of the Moguls, China since early European penetration, Japan since the Hermit Kingdom. (Formerly HIST 304).

HIST 411 **4 (4,0)**

Colonial America, 1607-1763: The voyages of discovery, the origins of the thirteen colonies, and their political, economic, social, and religious life in the 17th and 18th centuries.

HIST 412 **4 (4,0)**

The Age of the American Revolution, 1763-1789: The American Revolution — its origins, course, and impact upon American society — the Articles of Confederation, the Philadelphia Convention and its work.

HIST 413 **4 (4,0)**

Age of Jefferson: The writing of the Constitution, the Federalist decade, Jeffersonian Democracy, the War of 1812, and emergence of New Nationalism.

HIST 414 **4 (4,0)**

Reign of Jackson: Administration of Andrew Jackson to the Civil War.

HIST 415 **4 (4,0)**

Civil War and Reconstruction: Reconstruction, and impact of industrialism.

HIST 416 **4 (4,0)**

Robber Baron Era: The Agrarian Revolt, the Spanish-American War, and the Progressive Era.

HIST 417 **4 (4,0)**

United States History: 1914-1940: The Progressive Reforms of Woodrow Wilson, World War I, post-war prosperity, the Depression, and the New Deal.

HIST 418 **4 (4,0)**

United States History: 1941-Present: Contemporary America from World War II.

HIST 420 **4 (4,0)**

United States Diplomatic History: 1776-1914: A study of the evolution of basic American policies, American expansion and America's major wars with emphasis upon the international background.

HIST 421 **4 (4,0)**

United States Diplomatic History: 1914-Present: A study of the response of American diplomacy, the breakdown of the European equilibrium, the scientific revolution and the challenge of the totalitarian dictatorships.

HIST 422 **4 (4,0)**

American Culture I: The European Backgrounds; Puritanism; Enlightenment; the Great Awakening; Revolutionary Thought; Romanticism; the Southern Mind and the Yankee Response; Popular Culture and the rise of recreation.

HIST 423 **4 (4,0)**

American Culture II: The Darwinian Revolution; revolt of the intellectuals; the media explosion; mass entertainment in mass culture; the loss of community, the nuclear age, and presentism.

- HIST 424** 4 (4,0)
European Diplomatic History: 1815-1914: The relationship of the European great powers from the Congress of Vienna to the outbreak of the First World War.
- HIST 425** 4 (4,0)
European Diplomatic History: 1914-Present: The relationship of the European great powers from the outbreak of the First World War to the present.
- HIST 435** 4 (4,0)
China in 19th and 20th Centuries: The Mongols in China; coming of the Europeans; social structure; Communist movement; Japanese aggression.
- HIST 439** 4 (4,0)
Modern Japan, 19th and 20th Centuries: A survey of the Tokugawa Shogunate; Western contact in the 19th century; World War I; Japanese militarism; World War II; and U.S. occupation.
- HIST 441** 4 (4,0)
The Rise of Modern Germany: Central Europe from the Reformation to 1890: The Thirty Years' War and absolute despotism; AustroPrussian rivalry; the German Enlightenment, Bismarck and the Second Reich.
- HIST 442** 4 (4,0)
Hitler's Third Reich: German nationalism and militarism; World War I and the Versailles Treaty; the Weimar Republic and the rise of the Nazis; Second World War, division and recovery.
- HIST 446** 4 (4,0)
Fascism and the Totalitarian Dictatorships: Totalitarian ideologies, institutions, and practices in Lenin's and Stalin's Russia, Mussolini's Italy, and Hitler's Third Reich; fascist movements in the non-totalitarian states.
- HIST 455** 4 (4,0)
French Monarchy: Louis XI to Henry IV
- HIST 456** 4 (4,0)
French Monarchy: Henry IV to Louis XVIII
- HIST 458** 4 (4,0)
France, 1815-1914: Legacy of the French Revolution; Revolutions of 1830 and 1848; Franco-Prussian War and Third French Republic; Franco-German Rivalry and formation of the Entente.
- HIST 459** 4 (4,0)
France, 1914-Present: World War and aftermath; Locarno spirit; rise of Fascism and French response, World War II; Fourth Republic and Reconstruction; deGaulle and the Fifth Republic.
- HIST 461** 4 (4,0)
English History to 1485
- HIST 462** 4 (4,0)
English History: 1485-1815
- HIST 463** 4 (4,0)
British History: 1815-Present
- HIST 464** 4 (4,0)
British Empire and Commonwealth: Development of the British Empire and Commonwealth since the American Revolution.
- HIST 466** 4 (4,0)
British History: Tudor-Stuart Period: A study of the Tudor-Stuart period, with particular emphasis on the civil/religious conflicts of the time.
- HIST 470** 4 (4,0)
History of Russia to 1801: Kievan State; Mongol Yoke; Development of Muscovite Expansionism and Absolutism; Time of Troubles; Westernization of Russia under Peter I and Catherine; Role of Orthodox Church.

- HIST 471** **4 (4,0)**
History of Russia: 1801-1917: Alexander I; Napoleonic Invasion; Revolutionary Movement; Russian Policy toward Central Asia and China; Great Reforms; Russo-Japanese War; Revolution of 1905; Constitutional Period; Triple Entente.
- HIST 472** **4 (4,0)**
History of the Soviet Union: 1917-Present: First War; 1917 Revolutions; Civil War; New Economic Policy; Stalin-Trotsky Struggle; Collectivization; Stalinist Purges; Second War; Post-Stalin Russia; Khrushchev; Sino-Soviet Relations.
- HIST 473** **4 (4,0)**
Soviet Foreign Policy: 1917 to Present: Begins with Comintern policy, establishment of relations with capitalist countries, rise of Fascism, World War II, post-Stalin foreign policy.
- HIST 480** **4 (4,0)**
History and Historians: PR: C.I. A study of European and/or American historiography. May be repeated once for credit.

HUMANITIES

- HUM 201** **4 (4,0) F,W,S,Su**
Landmarks in Western Humanities: Selected examples of man's creative achievements in literature, philosophy, art, music; inter-related to enlarge understanding of the nature of man and appreciation of human values.
- HUM 351** **4 (4,0)**
The Classical World: Greece: History and culture of Greece from the Minoan-Mycenaean to the Hellenistic age, with emphasis on contributions in art, literature and philosophy. (Same as HIST 351).
- HUM 352** **4 (4,0)**
The Classical World: Rome: History and culture of Rome from the Etruscan Period to the dissolution of the empire, with emphasis on contributions in architecture, law and literature. (Same as HIST 352).
- HUM 401** **4 (4,0) F**
The Ideal of Nature in the Arts: The search for identity with nature revealed in the arts of various times and cultures. Concerns feeling, imagination, subjectivity, creativity. Open to all upperclassmen.
- HUM 402** **4 (4,0) W**
The Classical Ideal in the Arts: The search for order and form reflected in the arts of Greece and later cultures. Concerns reason, structure, objectivity, harmony. Open to all upperclassmen.
- HUM 403** **4 (4,0) S**
The Spiritual Ideal in the Arts: The search for the meaning and experience of the sublime reflected in the arts. Spiritual impulses contrasted to pathos and ethos. Open to all upperclassmen.

HUMANITIES AND FINE ARTS

- HFA 416** **6-15**
Supervised Special Training: Supervised special work experience. Open to students combining a major in Humanities and Fine Arts with Business Administration. Must be arranged in advance of registration.
- HFA 490** **3 (3,0)**
Senior Seminar: Humanities and Arts in Human Affairs: Forum on the art and thought of the contemporary world. Intended for senior students. Offered as Advanced Environmental Studies seminar.

INDUSTRIAL ENGINEERING AND MANAGEMENT SYSTEMS

- IEMS 301** **4 (3,2) F**
Management Standards: CR: ENGR 341 or equivalent. Management standards for evaluation and control of man and man-machine systems. Flow and operation analysis, work measurement, job evaluation, wage determination techniques. Laboratory assignments.
- IEMS 311** **4 (4,0) Su**
Engineering Law: PR: Junior standing. Influence of contract, property and tort law, upon engineering activities; contracts, agency, partnerships, corporations, liens and expert testimony. Patents and licensing.
- IEMS 324** **3 (3,0)**
Production Management: PR: Sophomore standing. Principles and methods of production viewed from a managerial decision-making level.
- IEMS 332** **3 (3,0) Su**
Statistical Quality Control: Statistical concepts and methods applied to the control of quality of manufactured products. (Same as STAT 332).
- IEMS 412** **4 (4,0) W**
Safety Engineering: PR: Junior standing. Basic principles of accident prevention in relation to hazards within workplace environment including machinery, flammable materials, pressure vessels and electrical hazards.
- IEMS 413** **4 (4,0)**
Safety Administration: Organization of safety programs. Motivating safety habits and safety consciousness. Organizational aspects of accident prevention. Safety information systems and accident costs.
- IEMS 414** **4 (3,2) S**
Industrial Facilities Planning Design: PR: IEMS 301. Comprehensive design of industrial production systems including inter-relationships of plant location, process design, and materials handling. Laboratory assignments using computer and scale models.
- IEMS 422** **3 (2,2) Su**
Network Analysis: PR: ENGR 442. Development, application and computerized analysis of networks for systems analysis and control. Applications of CPM, PERT, GERT, and maximal flow concepts.
- IEMS 424** **3 (3,0) F**
Management Control Systems: PR: ENGR 371. Management decision rules including mathematical and economic models of forecasting, scheduling, order, and inventory control problems. Lab assignments using computer algorithms.
- IEMS 432** **3 (2,2) S**
System Simulation with Digital Computers: PR: COMP 302 or equivalent. Methods and procedures for simulating large scale systems with digital computers, FORTRAN, CSMP and GPSS programming languages are used.
- IEMS 434** **3 (3,0) W**
Industrial Information Systems: PR: COMP 302, IEMS 424. Study of computerized information systems applied to manufacturing operations. Emphasis on development of automated information systems for control of men, materials and equipment. Laboratory assignments.
- IEMS 441** **4 (4,0)**
Mathematical Systems Theory I: PR: MATH 331 and Senior standing. Concepts of linear systems analysis. Introduction to state and space techniques. Stable and unstable behavior of linear systems.

- IEMS 447** **3 (3,0) W**
Numerical Methods in Systems Analysis: PR: ENGR 371. Application of vector space and matrix concepts to systems problems. Analysis of linear transformations and simultaneous linear equations. Introduction to finite Markov processes.
- IEMS 450** **4 (3,2) W**
Biomedical Engineering: PR: ENGR 342 or C.I. Engineering description and analysis of living systems. Systems Analysis and its application to biomedical and ecological systems. Laboratory assignments.
- IEMS 461** **3 (2,2) S**
Human Engineering: PR: Senior standing. Man-machine systems; design and conduct of human engineering studies.
- IEMS 463** **4 (4,0)**
Occupational Health: Industrial health hazards and occupational diseases. Control of health hazards; substitution of less toxic materials, process changes, segregation of hazardous processes, noise control, radiation hazards.
- IEMS 470** **3 (3,0)**
Introduction to Public Systems Analysis: PR: ENGR 371 or equivalent. Application of probability and statistics to the analysis of public systems data. Operations research models and applications; economic decision-models; cost/benefit analysis.
- IEMS 502** **3 (3,0) F**
Probability for Engineers: PR: ENGR 371. Engineering application of probability, combinatorial analysis, sample space, events, probability, discrete and continuous random variables, and probability distributions. (Same as STAT 535).
- IEMS 503** **3 (3,0) W**
Statistics for Engineers: PR: ENGR 371. Engineering application of statistics, significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation. (Same as STAT 536).
- IEMS 510** **4 (3,2)**
Industrial Fire Protection Engineering I: PR: Consent of instructor. Chemistry of combustion, fire hazards properties of materials, storage and handling. Fire protection standards, codes and regulations. Building and facilities design and construction.
- IEMS 512** **4 (3,2)**
Industrial Security Systems Engr: PR: Consent of instructor. Consideration of security threats. Methods of detection/control with emphasis on design and layout of automatic alarm systems for intrusion detection.
- IEMS 521** **3 (3,0) W**
Engineering Reliability and Quality Assurance: PR: ENGR 371 or C.I. Design and management of reliability programs and quality assurance systems; mathematics of reliability.
- IEMS 532** **4 (4,0) S**
Management Information Systems I: PR: IEMS 434 or C.I. The design and implementation of computer-based Management Information Systems. Consideration is given to the organizational, managerial and economic aspects of MIS.
- IEMS 541** **4 (4,0) F**
Mathematical Systems Theory II: PR: IEMS 441 or equivalent. Introduction to non-linear analysis. Approximation methods and numerical solutions. Stability of non-linear systems. Systems examples to be taken from engineering, environmental science, and economics.
- IEMS 550** **4 (3,2)**
Biomedical Instrumentation: PR: ENGR 342 or C.I. Theory and techniques of biological instrumentation systems including transducers and computers

stage decision processes based on the application of the principle of optimality. Stochastic and deterministic models are developed.

IEMS 629 **4 (4,0)**

Production & Inventory Control: PR: IEMS 424 or equivalent. Review of models and techniques used in forecasting, production control and inventory control. Includes aggregate planning, production scheduling, inventory management, models, etc.

IEMS 640 **4 (4,0) F**

Systems Dynamics: PR: COMP 302 or equivalent. Industrial dynamics and the use of computer-based simulation models for the improvement of management control systems. Use of Dynamo II computer simulation language.

IEMS 641 **4 (4,0) W**

Mathematical Systems Theory III: PR: IEMS 541. Adaptive systems and trainable machines. Introduction to cybernetics and artificial intelligence.

IEMS 667 **3 (3,0)**

Man — Computer Interaction: PR: IEMS 461 or C.I. The elements of man-computer interactive systems; hardware and software considerations; requirements of CAI, CAD, and MIS applications; design difficulties found in these systems.

IEMS 671 **3 (3,0)**

Public Works Economics: PR: ENGR 341 or equivalent. Economic considerations in public works planning. The nature and objective functions of public works projects; cost estimating, cost allocation and pricing. Cost/benefit analysis on primary and secondary benefits from public works projects.

IEMS 672 **4 (4,0)**

Urban Dynamics: PR: IEMS 540. Development of dynamic and community systems models. Use of computer simulation to analyze governmental and private sector policies in selected areas such as housing programs, industrial growth, worker training programs, environmental quality control, urban planning and land use planning.

IEMS 678 **3 (3,0) W**

Public Operating Systems Analysis: PR: ENGR 371 or equivalent. Establishment of data base for public operating systems, including identification of data requirements. Development of service demand and workload relationships, resource and manpower requirements.

ITALIAN

ITA 100 **1 (1,0)**

Italian Diction: This course is especially designed for music and voice students with an emphasis on musical terms, Italian songs and opera libretti.

ITA 101 **4 (4,1) F**

Elementary Italian Language and Civilization: Designed to initiate the student to the major language skills: listening, speaking, reading, and writing, in addition to an introduction to Italian culture.

ITA 102 **4 (4,1) W**

Elementary Italian Language and Civilization: PR: ITA 101 or equivalent. Continuation of ITA 101.

ITA 103 **4 (4,1) S**

Elementary Italian Language and Civilization: PR: ITA 102 or equivalent. Continuation of ITA 102.

J

JOURNALISM

JRN 319 **4 (1,3) F,W**

Basic Reporting: Development of skills in gathering and writing for the mass media. Student must have minimum ability to type.

- JRN 321** **4 (2,2) W,F**
Copy Editing: PR: JRN 319. Fundamentals of copy editing for printed media, including selection, processing and display of news.
- JRN 322** **4 (4,0) S**
Advanced Editing: PR: JRN 321 or equivalent. Planning content and format of newspaper and other periodicals; layout; dummyming, departmental editing, copy desk management.
- JRN 323** **4 (4,0)**
Photojournalism I: Learning the use of the still camera, darkroom procedures, role of the photographer.
- JRN 324** **4 (4,0)**
Photojournalism II: PR: JRN 323 or equivalent. Further study in the use of the still camera and darkroom procedures plus color photography.
- JRN 330** **4 (4,0) W**
History of American Journalism: Development of newspapers and magazines, the press associations and the growth of the electronic media.
- JRN 331** **3 (3,0)**
Film Criticism: PR: C.I. The practice of writing movie reviews: students will review at least one film a week during the course.
- JRN 420** **4 (4,0)**
Technical and Scientific Writing: PR: C.I. The practice in the gathering of materials for technical and scientific articles; digesting of technical information into more readable forms.
- JRN 421** **4 (4,0)**
Editorial and Column Writing: PR: C.I. Building the editorial page, back-grounding and interpreting the news.
- JRN 422** **4 (4,0)**
Public Affairs Reporting: PR: JRN 319 or C.I. Study of community news sources, reporting courts, city and county government.
- JRN 423** **4 (4,0)**
Writing for the Mass Media: PR: C.I. Students write for a certain segment of the mass media of their own choosing. Will include creative writing, article writing, etc. May be repeated for credit.
- JRN 424** **4 (4,0)**
Critical Writing: PR: C.I. Practice in writing reviews of plays, concerts, and books.
- JRN 425** **4 (4,0)**
Feature Writing: PR: C.I. Writing of feature articles for newspapers and magazines.
- JRN 426** **4 (4,0)**
Political Cartooning I: PR: Evidence of drawing ability. The history and technique of the political cartoon plus marketing and syndication considerations.
- JRN 427** **4 (4,0)**
Political Cartooning II: PR: JRN 426 or C.I. Further study into the technique of political cartooning.
- JRN 430** **4 (4,0)**
The Newspaper in the Classroom: Study of the use of the newspaper as a teaching aid in the classroom. Designed for persons currently teaching or majoring in education.
- JRN 431** **4 (4,0)**
International Communication and the Foreign Press: A study of the news communicating systems of the world, the role of foreign correspondents, the foreign press.

- JRN 433** **4 (4,0) W,Su**
Propaganda and Psychological Warfare: Propaganda and psychological warfare principles with a study of the activities engaged in by nations.
- JRN 440** **4 (4,0)**
Public Relations: Principles and practice of public relations, the means of gaining publicity and influencing people.
- JRN 441** **4 (4,0)**
Public Relations Campaigns: PR: JRN 440. Planning and execution of a public relations campaign; use of research and coordination of elements of the campaign.
- JRN 442** **4 (4,0)**
Institutional Public Relations: PR: JRN 440 or C.I. Principles and methods of public relations as practiced by educational, medical and corporate-related institutions.
- JRN 464** **4 (4,0)**
Principles of Advertising: PR: RTV 451. Analysis of field of advertising; purposes, techniques, media, organization, and role of research; economic and social aspects of advertising. (Same as MKTG 364).
- JRN 465** **4 (4,0)**
Advertising Media: PR: JRN 464 or C.I. Evaluation of advertising media, their ability to serve the advertiser's communication needs and analysis used in determining media success.
- JRN 466** **4 (2,2) S**
Advertising Copy: PR: JRN 464. The writing and preparation of advertising copy.
- JRN 467** **4 (4,0) S**
Advertising Campaign: PR: JRN 464, JRN 465, JRN 466. The planning and execution of an advertising campaign; use of research and coordination of elements of the campaign.
- JRN 468** **4 (2,2)**
Newspaper and Magazine Advertising: PR: C.I. A study of print advertising as it affects the retail advertiser; the mechanical requirements and limitations in print advertising.

L

LEGAL SERVICES — ALLIED

- LES 201** **4**
Development of Anglo-American Law: A historical survey of the development of the principles and processes of the American Law from its origins in English common law to the present. (Same as HIST 210).
- LES 202** **4**
Law and Justice: An examination of the philosophical origins of various concepts of legal justice with emphasis on the Anglo-American system.
- LES 301** **4**
Law and Society: An overview of the law and the legal system and how they relate to our social, political and economic environment.
- LES 302** **4**
Legal Investigation: A study of how legal questions are researched to obtain the applicable law. Examination of information collection and investigation procedures involved in legal actions.
- LES 303** **4**
Comparative Legal Systems: A comparison of the Anglo-American system of law with those of selected contrasting cultures and nations.

applications. The nature of biological signals, their detection, analysis and display.

IEMS 602

3 (3,0) F

Engineering Economic Analysis: PR: ENGR 341. The engineering economic audit, breakeven point analysis, variable budget control of manufacturing costs, cost analysis and product pricing.

IEMS 603

3 (3,0) Su

Analysis of Industrial Operations: PR: IEMS 602. Role of engineering economics and operations research in analysis of industrial operations. Includes application of linear programming, queueing, inventory model and decision theory case studies.

IEMS 610

3 (3,0) S

Project Engineering: PR: Graduate standing. Role of the project engineer in research and development, emphasizing the sequence of steps from project proposal to project completion. Analytical techniques will be considered.

IEMS 611

4 (3,2)

Industrial Fire Protection Engineering II: PR: IEMS 510. Design/test of plant water supply systems. Methods of fire detection/control including design layout of automatic water, gas, powder extinguishment systems. Inspection/maintenance procedures.

IEMS 612

3 (3,0) W,Su

System Safety: PR: IEMS 412 or C.I., Concepts of system safety as applied to the recognition, evaluation and prevention or control of hazards in industry. Fault free analysis and risk management.

IEMS 620

3 (3,0) Su

Queueing Systems: PR: IEMS 502. Analysis of queueing systems and waiting line problems using analytical and Monte Carlo methods. Laboratory assignments.

IEMS 621

3 (3,0) W

Production Control: PR: IEMS 424 & IEMS 434 or C.I. Analytical methods in production control. Topics include: forecasting, production planning & scheduling, sequencing, and manufacturing process control. Emphasis given to the application of computer systems.

IEMS 622

3 (3,0) S

Inventory Theory: PR: IEMS 424 & IEMS 434 or C.I. Introduction to the theory of inventory control. Emphasis on construction and solution of mathematical models. Includes analysis of inventory systems under deterministic & stochastic demand.

IEMS 624

3 (3,0) F

Operations Research I: PR: ENGR 442 or equivalent. Methods of operations research including formulation of models and derivation of solutions by optimization techniques; sequencing and replacement, linear programming, geometric and dynamic programming.

IEMS 625

4 (4,0) W

Operations Research II: PR: IEMS 624. Introduction to stochastic models and techniques including queueing theory. Simulation, non-linear programming, calculus of variations, and forecasting.

IEMS 626

4 (4,0) F

Linear Programming: PR: ENGR 442 or equivalent. Theoretical and computational aspects of linear programming and related topics. Includes simplex algorithms, duality theory and integer programming. Operational applications and computer solutions are emphasized.

IEMS 627

4 (4,0) W

Non-linear Programming: PR: IEMS 624. Study of non-linear models and their solution. Topics in non-linear programming, separable programming, and geometric programming.

IEMS 628

4 (4,0) S

Dynamic Programming: PR: IEMS 624. A study of the optimization of multi-

- LES 304** 4
Law and the Paraprofessional: A study of the duties of the legal assistant in a law office. An examination of the ethical standards under which he works.
- LES 305** 4
Litigation and Trial Practice: A study of the more common types of law suits and procedures involved in the preparation, litigation and appeal of cases.
- LES 306** 4
Law Office Administration: A study of the organization, control, and operation of a law office with emphasis placed on the role of the legal administrator.
- LES 315** 4
Administrative Law: Study of the law governing the structure and processes of public service agencies and government departments and bureaus.
- LES 328** 4
Land Use Law I: Study of the law governing land use including planning, zoning, subdivision and building regulations.
- LES 342** 4
Estates and Trusts: A study of the common forms of wills and trusts and the applicable legal principles; of administration of estates; and of the probate court.
- LES 374** 4
Property Law: A study of legal practices, restraints, and privileges governing rights to real property.
- LES 376** (4)
Criminal Law and the Paraprofessional: A study of the role of the legal assistant in criminal cases; the procedures involved in preparing for trial; trying the case; and appeals.
- LES 378** 4
Court Administration: A study of the policies and procedures of modern court administration.
- LES 380** 4
Real Estate Law: A study of the law of real property; the more common types of real estate transactions and conveyances; and closing procedures and title problems.
- LES 428** 4
Land Use Law II: Examination of recent statutory changes and judicial interpretations of land use law, especially vis-a-vis planning and environmental protection.
- LES 442** 4
Domestic Relations Law: A study of the law of domestic relations, to include divorce, child support and adoptions, and an examination of the role of the legal assistant.

M

MANAGEMENT

- MGMT 301** 3 (3,0) F,W,S,Su
Management and Organization Behavior: Fundamentals of management showing how the manager in any organization effectively performs the functions of planning, organizing, directing, and controlling.
- MGMT 311** 3 (3,0) F,W,S
Human Behavior and Interpersonal Relations: PR: MGMT 301 or C.I. Human behavior and its effect upon the operation of formal organizations.
- MGMT 364** 4 (4,0) F,W,S
Personnel Management: PR: MGMT 301. An investigation of personnel prac-

tices and interpersonal relationships involved in managing employees. Internal problems of labor control and the utilization of human resources are considered.

MGMT 401 4 (4,0) F,W,S

Organization Theory: PR: MGMT 301. Elements in organizations and the processes by which they develop and influence behavior are considered.

MGMT 402 4 (4,0) F,W,S

Decision Systems Analysis: PR: COMP 303 or C.I., and MGMT 301. Decision systems as an instrument to assist in making competent business decisions. Design, installation, and operation of decision systems in a practical business environment.

MGMT 403 4 (4,0)

Managing Decision Systems: PR: MGMT 402. An introduction to the managerial competencies required to assure effective and efficient operation of a decision system after its installation.

MGMT 424 4 (4,0) F,W,S

Production Management Problems: PR: MGMT 301, BADM 324, and STAT 301. Problems in the management of industrial enterprise. Management principles and mathematical analysis applied to manufacturing; product development and production; materials and production control; employee relations.

MGMT 464 4 (4,0)

Personnel Problems: PR: MGMT 364. Case studies in personnel problems directed toward the application of personnel management theory and concepts to organization problems.

MGMT 465 4 (4,0) F,W,S

Industrial Relations: PR: MGMT 364 or C.I. The impact of trade unionism on industrial relations; current problems, conflicts and trends; the development of managerial approaches to achieve labor-management cooperation.

MGMT 466 4 (4,0)

Human Relations in Management: PR: MGMT 301. The individual, interpersonal and group relations and inter-group and organizational problems in business.

MGMT 480 4 (4,0) F,W,S

Planning and Control: PR: MGMT 301. Emphasizes planning and controlling processes, including statement of organization objectives, development and implementation of an action plan, an evaluation of performance, and required follow-up activities.

MGMT 501 4 (4,0) F,S

Management and Production Concepts: PR: Acceptance into the graduate program. Fundamentals of management and production underlying the solution of problems relating to organization and operation of business enterprises.

MGMT 601 3 (3,0)

Planning and Control Analysis: PR: Graduate standing and MGMT 501 or equivalent. Emphasizes elements of the planning and control processes including objectives, action programs and control procedures. Discusses integration of the two processes.

MGMT 611 3 (3,0)

Analysis of Organizational Behavior: PR: Graduate standing and MGMT 501 or equivalent. The analysis of human behavior in organizations in terms of the individual, small group, intergroup relationships, and the total organization.

MGMT 621 3 (3,0)

Group Decisions and Analysis: PR: Graduate standing and MGMT 501 or equivalent. Experience in company-wide management decision-making by groups using the management game technique. Analysis of the group decision-making process using video tapes.

MGMT 650**3 (3,0)**

Evolution of Administrative Management: PR: Graduate standing and MGMT 501 or equivalent. The historical development of management in modern society with emphasis in the management process as applied within the economic, social, political, and legal environment.

MGMT 656**3 (3,0)**

Research and Development Management: Graduate standing and MGMT 501 or equivalent. An examination of the function of Research and Development and the impact of technological innovation on our economic and social systems.

MARKETING**MKTG 301****5 (5,0) F,W,S,Su**

Marketing: Study of functions, institutions and basic problems in marketing of goods and services in our economy.

MKTG 326**4 (4,0) F,W,S**

Consumer Market Behavior: PR: MKTG 301. An analysis of consumer motivation, buying behavior, market adjustment and product innovation. Behavioral aspects of the marketing process from producer to ultimate user or consumer are considered.

MKTG 334**4 (4,0)**

Marketing Models and Logistics: PR: MKTG 301 and ECON 321. Qualitative and quantitative model building concepts applied to marketing problems with special emphasis on product planning, distribution, promotion strategy, and pricing problems.

MKTG 364**(4,0)**

Principles of Advertising: PR: Junior standing. Analysis of field of advertising; techniques, media, organization, and role of research; economic and social aspects of advertising. (Same as JRN 464).

MKTG 367**4 (4,0) F,W,S,Su**

Sales Management: PR: MKTG 301. Problems confronting sales manager; training in sales techniques; sales objectives and policies; organization; administration of sales force.

MKTG 384**5 (5,0) F,W,S**

Marketing Research: PR: MKTG 301 and ECON 321. Study of research procedures and techniques for problem solving in marketing. Concepts are explored and the incorporation of information resources into the management function demonstrated.

MKTG 469**4 (4,0)**

Channels of Distribution Management: PR: MKTG 301. Marketing activities and relationships within distribution channels. Primary attention given to decision making and policy formulation for wholesalers, retailers and integrated marketing institutions.

MKTG 485**4 (4,0) F,W,S**

Marketing Policies and Strategies: PR: MKTG 384 and C.I. Marketing problems and policies are explored with emphasis placed on the decision-making process.

MKTG 489**4 (4,0)**

Current Marketing Problems: PR: Senior standing, marketing major, and C.I. A course emphasizing the recognition and analysis of marketing problems arising from broad cultural, social, political, legal, economic, and competitive developments.

MKTG 501**4 (4,0) F,S**

Marketing Concepts: PR: Acceptance into the graduate program. Study of functions, institutions and basic problems in marketing of goods in the U.S. economy.

- MKTG 601** **3 (3,0)**
Marketing Policy: PR: Graduate standing and MKTG 501 or equivalent. Marketing policy formulation and decision-making with respect to planning, pricing, promotion and distribution.
- MKTG 602** **3 (3,0)**
Current Marketing Problems: PR: Graduate standing and MKTG 501 or equivalent. Analysis of marketing problems stemming from broad social, economic, and political developments. Topics treated cover broad classes of marketing institutions.
- MKTG 604** **3 (3,0)**
Sales Management and Control: PR: Graduate standing and MKTG 501 or equivalent. Emphasis is placed on the allocation and development of sales territories and the training, motivation, and supervision of a sales force.

MATHEMATICS

- MATH 100** **4 (4,0) F,W,S**
Principles of Mathematics: PR: Two years of high school mathematics. Selected topics in mathematics with primary emphasis on developing conceptual understanding and broadening insight into mathematics. Not intended for students in the Colleges of Business Administration, Engineering, or Natural Sciences.
- MATH 101** **4 (4,0) F**
Elementary School Mathematics I: PR: Two years of high school mathematics. Logic, sets, the system of whole numbers, numeration systems, the system of integers, the system of rational numbers. Open only to majors in elementary education.
- MATH 104** **4 (4,0) F,W,S**
Fundamental Algebra: Elementary algebra including factoring, plane coordinates, systems of linear equations, exponents and radicals, quadratic equations and inequalities, ratio, proportion, and logarithms. For those students whose preparation in mathematics is noncurrent or insufficient for MATH 106, 110, and 111.
- MATH 106** **4 (4,0) F,W,S**
College Algebra: PR: MATH 104 or 2 years of high school algebra. Sets; exponential and polynomial functions; formula manipulation; graphs; linear equations; vectors; matrices. Not open to students with credit in MATH 110.
- MATH 107** **5 (5,0)**
College Algebra and Trigonometry: PR: Two years of high school algebra or equivalent. Algebraic expressions, polynomials, graphs, systems of equations, exponents and logarithms; trigonometric functions, triangle trigonometry, laws of sines and cosines, special formulas and trigonometric identities.
- MATH 110** **4 (4,0) F,W,S**
Precalculus Mathematics I: PR: MATH 104 or two years of high school algebra and one year of high school plane geometry. This course is intended to cover most of the topics usually found in college algebra emphasizing the notion of function.
- MATH 111** **4 (4,0) F,W,S**
Precalculus Mathematics II: PR: MATH 110 or equivalent (e.g., a course in college algebra which required the mastery of the function concept). Exponential and logarithmic functions; circular and trigonometric functions; inverses of circular functions; complex numbers.
- MATH 201** **4 (4,0) W**
Elementary School Mathematics II: PR: MATH 101. The system of real numbers, polynomials, linear equations and inequalities, systems of equations and inequalities, quadratic equations and inequalities, the complex numbers. Open only to majors in elementary education.

- MATH 211** **3 (3,0 F,W,S)**
Analytic Geometry: CR: MATH 107 or MATH 111 or equivalent. Topics include coordinate systems; vectors; lines in the plane; lines and planes in space; conic sections; polar coordinates; transformation of coordinates.
- MATH 271** **4 (4,0)**
Logic and Proof in Mathematics: PR: Four years of high school mathematics or equivalent. Basic mathematical logic, methods of proof in mathematics, application of proofs to elementary structures. Primarily for mathematical sciences majors.
- MATH 301** **4 (4,0) S**
Elementary School Mathematics III: PR: MATH 201 or C.I. Algebraic structures, selected topics from number theory, experimental and formal geometry. Open only to majors in elementary education.
- MATH 311** **4 (4,0)**
Applied Calculus I: PR: College algebra and trigonometry. Differential and integral calculus applied to problems in engineering technology fields. Not open to students with credit in MATH 320 or MATH 321.
- MATH 312** **4 (4,0)**
Applied Calculus II: PR: MATH 311. Continuation of MATH 311.
- MATH 313** **4 (4,0) F,W,S**
Finite Mathematics: PR: MATH 106 or equivalent. Mathematical logic, set theory, Boolean algebra with applications in circuit design, matrices.
- MATH 314** **4 (4,0)**
Boolean Algebra: PR: MATH 323 or C.I. Axiomatic development of Boolean algebra; the algebras of sets, logic and circuits as Boolean algebras.
- MATH 315** **3 (3,0)**
Introduction to Number Theory I: PR: C.I. Divisibility; primes and composites; divisors; multiples; Euclid's algorithm; Diophantine equations; modulo arithmetic; simple continued fractions.
- MATH 316** **3 (3,0)**
Introduction to Number Theory II: PR: MATH 315. Continuation of MATH 315.
- MATH 317** **4 (4,0)**
Matrices: PR: MATH 323. Elementary properties of matrices; special, real and complex matrices; determinants and inverses; rank and systems of equations; transformations; eigenvectors; diagonalization; quadratic forms.
- MATH 318** **4 (4,0)**
Linear Algebra I: PR: MATH 271. A detailed analysis of finite dimensional linear spaces including bases, subspaces, dual spaces, quadratic forms, and applications to geometry.
- MATH 319** **4 (4,0)**
Linear Algebra II: PR: MATH 318. Continuation of MATH 318.
- MATH 320** **4 (4,0)**
Concepts of Calculus: PR: MATH 106 or equivalent. Differential and integral calculus of exponential and polynomial functions; optimization of multivariate functions; mathematical models. Not open to students with credit in MATH 321.
- MATH 321** **4 (4,0) F,W,S,Su**
Calculus I: PR: MATH 107, or MATH 110 and MATH 111, or equivalent. CR: MATH 211. The differential and integral calculus of elementary functions of one variable with attention to a variety of geometric and physical applications.
- MATH 322** **4 (4,0) F,W,S,Su**
Calculus II: MATH 321. Continuation of MATH 321.
- MATH 323** **4 (4,0) F,W,S,Su**
Calculus III: PR: MATH 322. Continuation of MATH 322.

- MATH 324** **4 (4,0) F,W,S,Su**
Intermediate Calculus: PR: MATH 323. Differential and integral calculus of functions of several variables with applications. Topics include vector differential calculus, partial derivatives; multiple integrals; line and surface integrals.
- MATH 331** **4 (4,0) F,W,S,Su**
Differential Equations: PR: MATH 323. First order ordinary differential equations; constant coefficients; variation of parameters; step-by-step integration; methods of Picard and Frobenius; input-output analysis; transform methods.
- MATH 341** **3 (3,0)**
Vector Analysis: PR: MATH 324. Derivatives and integrals of vector valued functions; the directional derivative and vector operators; the theorems of Green, Gauss, and Stokes; application in engineering and physical sciences.
- MATH 351** **4 (4,0)**
Foundations of Geometry: PR: C.I. Modern Euclidean geometry; logical defects in Euclid's geometry; simple axiomatic systems; introduction to finite and affine geometries. Intended for prospective teachers of mathematics.
- MATH 411** **4 (4,0)**
Algebraic Structures I: PR: MATH 271. An introduction to the properties of groups, rings, polynomial rings, integral domains and fields.
- MATH 412** **4 (4,0)**
Algebraic Structures II: PR: MATH 411. Continuation of MATH 411.
- MATH 420** **3 (3,0)**
Sequences and Series: PR: C.I. Convergence of infinite sequences and series; double series; infinite products. Intended for prospective teachers of mathematics.
- MATH 421** **3 (3,0)**
Introduction to Analysis I: PR: MATH 271 and MATH 324. Limits, sequences and continuity; differentiation and integration; derivatives of integrals; infinite series and convergence; the Bolzano-Weierstrass theorem and the Heine-Borel theorem; extensions in Euclidean n -space.
- MATH 422** **3 (3,0)**
Introduction to Analysis II: PR: MATH 421. Continuation of MATH 421.
- MATH 423** **3 (3,0)**
Introduction to Analysis III: PR: MATH 422. Continuation of MATH 422.
- MATH 424** **3 (3,0)**
Lebesgue Theory: PR: MATH 423. Inner and outer measure; measurable sets and functions; the Lebesgue integral.
- MATH 426** **3 (3,0)**
Complex Variables I: PR: MATH 324. Analytic and harmonic functions; mapping by complex functions; Cauchy's theorem and its implications; the maximum modulus principle; series expansions; the residue theorem and its applications.
- MATH 427** **3 (3,0)**
Complex Variables II: PR: MATH 426. Analytic continuation; decomposition of meromorphic functions into partial fractions; Mittag-Leffler theorem; entire functions; Weierstrass's Factorization theorem; Riemann Mapping theorem.
- MATH 428** **3 (3,0)**
The Number System: PR: C.I. An axiomatic development of the natural numbers followed by a constructive development of the real and complex numbers. Intended for prospective teachers of mathematics.
- MATH 429** **3 (3,0)**
Foundations of Calculus: PR: C.I. Functions; limits; continuity; differentiation and integration. Study of the basic structure of the calculus and recommended for prospective teachers of mathematics.

- MATH 431** **4 (4,0)**
Ordinary Differential Equations I: PR: MATH 323. First order differential equations; higher order differential equations; applications to mechanical and electrical systems, pursuit curves; Power series solutions and special functions.
- MATH 432** **4 (4,0)**
Ordinary Differential Equations II: PR: MATH 431. Sturm-Liouville boundary value problems; systems of first order equations; Volterra's prey-predator equations; nonlinear equations; stability; Poincare'-Bendixon theorem; existence and uniqueness of solutions.
- MATH 434** **3 (3,0)**
Applied Boundary Problems I: PR: MATH 331. Separation of variables; orthogonality and Fourier series; classification of equations; solutions in different coordinate systems; methods of characteristics; the Fourier integral transform and Dirac's delta function.
- MATH 435** **3 (3,0)**
Applied Boundary Problems II: PR: MATH 434. Adjoint forms and Green's functions; applications in engineering and the physical sciences.
- MATH 437** **3 (3,0)**
Laplace Transforms: PR: MATH 331. Laplace and Z transforms; solutions of ordinary and partial differential equations; application to circuit analysis and difference equations.
- MATH 438** **3 (3,0)**
Transform Calculus: PR: MATH 331. Fourier, Hankel and other transforms with applications to physical problems; the transformations of distributions.
- MATH 440** **3 (3,0)**
History of Mathematics: PR: Five hours of mathematics. A chronological study of the evolution of mathematical thought from primitive counting through modern ideas of the twentieth century. Recommended for prospective teachers of mathematics.
- MATH 451** **3 (3,0)**
Non-Euclidean and Projective Geometry I: PR: MATH 351 or C.I. Non-Euclidean geometry; projective plane, perspectivities, projectivities; projective theory of conics; analytic projective geometry; vector theory; linear theory; linear transformations in projective geometry.
- MATH 452** **3 (3,0)**
Non-Euclidean and Projective Geometry II: PR: MATH 451. Continuation of MATH 451.
- MATH 461** **4 (4,0)**
Topology I: PR: MATH 271. Metric spaces; topological spaces, limit points, connectedness; compactness; topology of surfaces; spheres with handles and crosscaps; Euler characteristics; topological invariants.
- MATH 462** **4 (4,0)**
Topology II: PR: MATH 461. Continuation of MATH 461.
- MATH 521** **3 (3,0)**
Advanced Calculus I: PR: MATH 324. Differential and integral calculus of functions of several variables; vector differential calculus. Emphasis on applications.
- MATH 525** **4 (4,0)**
Techniques of Complex Variables: PR: MATH 324. Analytic functions; integration in the complex plane; Laurent series and residue calculus, inversion of Laplace transforms; conformal mappings; applications in engineering and the physical sciences.
- MATH 535** **3 (3,0)**
Special Functions: PR: MATH 331. Series and integral representations, generating functions, recurrence relations, and orthogonality properties of

the special functions. Emphasis on Bessel, Legendre, hypergeometric functions, other special functions.

MATH 611

4 (4,0) A

Modern Applied Algebra: PR: MATH 324 or equivalent. Modern algebra for computer utilization and design: binary relations, finite state machines, groups, binary group coding, rings and ideals, polynomial codes.

MATH 621

3 (3,0)

Advanced Calculus II; PR: MATH 521. Continuation of MATH 521. Two and three-dimensional theory of vector integral calculus with application; infinite series.

MATH 625

3 (3,0) W

Methods of Mathematical Analysis I: PR: MATH 324 or equivalent. Mathematical analysis applied to boundary and eigenvalue problems: calculus of variations, vibrations of stretched strings and membranes, the potential equation, the heat equation, Fourier series.

MATH 626

3 (3,0)

Methods of Mathematical Analysis II: PR: MATH 625. Topics include self adjoint differential equations, the Sturm-Liouville problem, eigenvalues and eigenfunctions, variational methods, the Rayleigh Ritz method, Schrodinger's Wave equation, Green's functions.

MATH 633

3 (3,0)

Transform Theory: PR: MATH 525. Laplace, Fourier, Hankel and other integral transforms, inversion theorems; the Z transform; applications to physical problems.

MATH 641

3 (3,0)

Tensor Analysis: PR: MATH 341 or MATH 621 or equivalent. Contravariant and covariant tensors, metric tensors, geodesics, Christoffel symbols, covariant differentiation, curvature, Ricci tensor, Riemann-Christoffel tensor, and applications of tensors.

MATH 671

3 (3,0)

Approximation Theory: PR: MATH 423 or MATH 621. Normed linear spaces; Weierstrass approximation theorem; Tchebycheff approximation by polynomials; trigonometric approximation; orthogonal expansions and least squares approximations.

MECHANICAL ENGINEERING AND AEROSPACE SCIENCES

MEAS 341

3 (2,2) F,S

Kinematics and Kinetics of Machines: PR: ENGR 311. Graphical, mathematical, and computer aided kinematic analysis and synthesis of basic mechanisms. Kinetic analysis of machines.

MEAS 342

4 (4,0) W

Machine Design and Analysis: PR: MEAS 341. Application of concepts and principles of stress, deflection, strength, and fatigue analysis to machines design. Design Project.

MEAS 351

3 (2,2) F,S

Measurement Systems: PR: ENGR 312 and ENGR 321. Application of system design concepts to measurements. Fundamental theory of static and dynamic measurements. Behavior of transducers individually and in open-loop systems. Validation of experimental data. Measurements are considered as information transfer accompanied by energy transfer.

MEAS 371

4 (4,0)

Fluid Mechanics: PR: ENGR 332. Continuation of ENGR 332. Topics in gas dynamics including shock waves, viscous flow analysis and solutions in boundary layer theory.

- MEAS 382** **4 (4,0)**
Thermodynamics of Mechanical Systems: PR: ENGR 431. Applied thermodynamics, availability analysis, thermodynamics of reactive and non-reactive mixtures, thermodynamic relations of properties. Thermodynamic design analysis of complete mechanical systems.
- MEAS 411** **4 (3,2)**
Aerodynamics: PR: ENGR 332. Principles of subsonic and supersonic flight; airfoils in compressible and incompressible flow; flow about a body; thin airfoil and finite airfoil theory.
- MEAS 423** **4 (4,0) W**
Vibration Analysis: PR: ENGR 312. Undamped and damped vibrations of single degree of freedom systems. Forced vibrations, transient response. Many degrees of freedom systems, normal modes, vibration of elastic bodies.
- MEAS 432** **4 (4,0)**
Propulsion Systems: PR: ENGR 431. Analysis of jet propulsion systems including turbojets, ramjets, and rockets.
- MEAS 436** **4 (4,0)**
Mechanical Power Systems: PR: ENGR 431. Analysis and design of large power generating systems and components with emphasis on steam plants utilizing both chemical and nuclear fuels.
- MEAS 437** **(4) W**
Nuclear Engineering: PR: ENGR 431 and PHYS 344. Introduction to the principles of nuclear engineering, nuclear chain reactions, reactor systems, and control, health physics, radiation shielding and applications of nuclear energy.
- MEAS 439** **(4) S**
Nuclear Reactor Engineering: PR: MEAS 437. Nuclear concepts, and plant cycles for energy conversion. Application of thermodynamics, fluid mechanics, heat transfer, control theory and materials to nuclear reactor design.
- MEAS 442** **3 (3,0)**
Dynamics of Machinery: PR: MEAS 341, MEAS 423. Critical speeds and response of flexible rotor systems, whirl, gyroscopic effects; balancing of rotating and reciprocating masses; cam dynamics.
- MEAS 482** **4 (3,2) F,S**
Heat Transfer: PR: ENGR 431. Steady state and transient conduction in one and two dimensions, convective and radiative heat transfer. Analysis and design of heat exchangers.
- MEAS 511** **3 (3,0)**
Aerodynamics: PR: MEAS 411 or equivalent. Advanced aerodynamics principles including fluid dynamics, potential flow theory, airfoil and finite wing theory.
- MEAS 523** **4 (4,0)**
Acoustics: PR: C.I. Elements of vibration theory and wave motion; radiation, reflection, absorption, and transmission of acoustic waves; architectural acoustics; control and abatement of environmental noise pollution.
- MEAS 537** **3 (3,0)**
Energy Conversion: PR: ENGR 431 and PHYS 344. Unconventional method of energy conversion; particular emphasis on fuel cells, thermoelectrics, thermionics, solar energy, photovoltaics, nuclear, and magnetohydrodynamics.
- MEAS 581** **3 (3,0)**
Statistical Thermodynamics: PR: ENGR 331. Statistical approach to thermodynamic concepts, laws, and methods of analysis. Generalized p-v-T data. Special systems.
- MEAS 601** **4 (4,0) F**
Energy Analysis: PR: Consent of instructor. Examination of energy demands

and potential supply, computer simulation of resource depletion, alternate energy resources, transportation systems, economic and environmental constraints.

MEAS 611 **3 (3,0)**

Aerodynamics: PR: MEAS 411 or equivalent. Theoretical methods useful for predicting performance and stability of thin lifting surfaces and slender vehicles at subsonic, supersonic and hypersonic speeds.

MEAS 613 **3 (3,0)**

Aeromechanics: PR: MEAS 413 or equivalent. Advanced applied aerodynamics including stability and control of aerospace vehicles. Generalized vehicle performance. Small disturbance dynamic stability and control response.

MEAS 632 **3 (3,0)**

Turbomachinery: PR: MEAS 432 or MEAS 436 or equivalent. Application of the principles of fluid mechanics, thermodynamics and aerodynamics to the design and analysis of pumps, compressors, and turbines.

MEAS 638 **3 (3,0) F**

Environmental Thermodynamics: PR: ENGR 431 or equivalent. Thermodynamics of the environment with applications to the analysis, control and design of thermal systems.

MEAS 641 **3 (3,0)**

System Control: PR: ENGR 421 or equivalent. Theoretical, experimental and computer methods involved in the design and control systems. Emphasis on non-linear systems and advanced methods for control system analysis and optimization.

MEAS 642 **(3) W**

Principles of Design: PR: MEAS 342 or equivalent. Engineering design algorithm, graphical and computer-aided kinematic synthesis and dynamic analysis. Machine materials and properties, tension torsion, bending and strength under combined stresses.

MEAS 643 **33 (3,0) S**

Mechanical Design: PR: MEAS 642. Energy methods in design. Shock, impact, failure theories, thermal stress and pre-stressing for strength. Design using composite, honeycomb, reinforced materials and plastics.

MEAS 644 **3 (3,0)**

Computer-Aided Design: PR: Graduate standing. Study and engineering application of computer-aided approaches to component and system feasibility study and design considerations computer graphics.

MEAS 653 **3 (2,2) F**

Advanced Engineering Instrumentation: PR: MEAS 351 or equivalent. Theoretical and experimental study of principles of operation, analysis and design techniques for systems of a mechanical and electromechanical nature.

MEAS 671 **4 (4,0) S**

Gas Dynamics: PR: MEAS 371 or C.I. Analysis of steady and unsteady subsonic, supersonic and hypersonic flows. Aerodynamics applications to the design of nozzles, diffusers, and high speed wind tunnels.

MEAS 674 **4 (4,0) W**

Mechanics of Viscous Flow: PR: EMCS 471 or C.I. Principal concepts and methods for viscous fluid motion. Incompressible and compressible boundary layer analysis for laminar and turbulent flows.

MEAS 676 **3 (3,0)**

Two Phase Flow: PR: C.I. General transport equations for multiphase systems including gas-liquid, gas-solid and liquid-solid systems.

MEAS 680 **3 (3,0)**

Classical Thermodynamics: PR: MEAS 372 or C.I. A general postulative approach to classical macroscopic thermodynamics featuring states as fundamental constructs. Conditions of equilibrium, stability criteria, thermodynamic potentials, Maxwell relations and phase transitions.

- MEAS 682** **3 (3,0)**
Combustion Phenomena: PR: MEAS 482. Physical and chemical aspects of combustion phenomena. Rate processes, chemical kinetics, structure, propagation, aerodynamics and stability of premixed and diffusion flames.
- MEAS 685** **3 (3,0) F**
Conduction Heat Transfer: PR: MEAS 482 or C.I. Classical and numerical techniques to the solution of steady and transient conduction heat transfer problems, applications to the design of thermal systems.
- MEAS 686** **4 (4,0) W**
Convection Heat Transfer: PR: MEAS 674 or C.I. Convection heat, mass and momentum transfer in laminar and turbulent flows. Emphasis on analysis and evaluation of heat transfer coefficients, heat exchanger theory and design.
- MEAS 688** **3 (3,0)**
Radiation Heat Transfer: PR: MEAS 482 or C.I. Radiation properties and analysis of radiation heat transfer problems. Experimental techniques, applications to the design of space devices and solar energy systems.
- MEAS 689** **4 (4,0)**
Solar Energy Systems: PR: ENGR 331, 332, MEAS 482 or C.I. Application of thermal science fundamentals to analysis of solar energy components and systems. Solar radiation, flat plate collectors, focusing collectors, water heating; space heating and cooling.

MEDICAL RECORD ADMINISTRATION

- MRA 300** **3 (2,2) F**
Medical Record Administration: An introduction to the field of medical record administration.
- MRA 301** **5 (3,4) W**
Evaluation of Patient Care: PR: MRA 300 or C.I. Problem oriented medical record; accreditation, certification; health statistics; release of information; medical staff committees; prospective, concurrent and retrospective evaluation techniques.
- MRA 302** **5 (3,4) S**
Coding and Indexing Procedures: PR: AHS 305. Special registries; nomenclatures; coding and indexing; application of indices to research.
- MRA 370** **1 (0,4) W**
Directed Experience I: PR: AHS 305 and MRA 300. Transcription and interdepartmental experience in selected health care facilities.
- MRA 371** **1 (0,4) S**
Directed Experience II: PR: MRA 370. Application in a health record facility of the principles of filing; quantitative, qualitative record analysis; correspondence; microfilming; coding and indexing procedures.
- MRA 403** **5 (3,4) F**
Health Care Records: PR: MRA 301 or C.I. Medical record standards and procedures for long term, ambulatory, home care, and other health care institutions. Field trips.
- MRA 421** **3 (2,2) S**
Analysis of Medical Record Department Operations: PR: AHS 420. Forms analysis and control; work distribution and simplification; other evaluation techniques.
- MRA 422** **3 (3,0) S**
Medical Care Evaluation: PR: MRA 421. Organizational structures; development and use of criteria in evaluating medical care, systems and procedures.
- MRA 472** **2 (0,8) F**
Directed Experience III: PR: MRA 371. Supervised management experience in the medical record department of an approved health care facility.

MRA 473

2 (0,8) W

Directed Experience IV: PR: MRA 472. Continuation of MRA 472.

MRA 474

4 (0,16) S

Management Affiliation: Four weeks of affiliation at a selected health care facility serving in an administrative capacity under the direction of a Registered Record Administrator.

MEDICAL TECHNOLOGY

MEDT 340

3 (2,5)

Techniques in Clinical Microscopy: PR: MICR 200 and C.I. Analysis of human urine and other body specimens, chemically and microscopically; interpretation of abnormal results and their correlation to disease included.

MEDT 341

4 (3,4) S

Techniques in Clinical Chemistry: PR: CHEM 322. Laboratory techniques in clinical chemistry; instrumentation emphasized.

MEDT 342

4 (3,6) W

Hematology: PR: ZOOL 334, CHEM 263 or C.I. Diagnostic procedures and morphologic interpretation related to blood cells and the correlation of this data to disease.

MEDT 343

4 (3,3) S

Immunoematology and Coagulation: PR: ZOOL 334 or C.I. Clinical blood banking and coagulation; leukocyte typing, antigen-antibody identification, interpretation, correlation of abnormal results to disease.

MEDT 401

4 (0,20) F

Clinical Practice I: PR: Admission to Medical Technology Internship or C.I. Rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Bank, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

MEDT 402

4 (0,20) W

Clinical Practice II: PR: Admission to Medical Technology Program or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

MEDT 403

4 (0,20) S

Clinical Practice III: PR: Admission to Medical Technology Program or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

MEDT 404

4 (0,20) Su

Clinical Practice IV: PR: Admission to Medical Technology Internship or C.I. Clinical rotation in one or more of the following areas: Hematology, Chemistry, Microbiology, Blood Banking, Serology-Coagulation, Clinical Microscopy, Nuclear Medicine.

MEDT 440

4 (4,0)

Clinical Pathogenic Microbiology: PR: Admission to Medical Technology Internship or C.I. Isolation and identification of pathogenic bacteria by culture and serological methods; interpretation of abnormal results, their correlation to disease emphasized.

MEDT 441

4 (4,0)

Advanced Clinical Chemistry I: PR: CHEM 441 and C.I. Practice in clinical chemistry; human enzyme systems, renal function, liver function tests, etc.

MEDT 442

3 (3,0)

Advanced Clinical Chemistry II: PR: MEDT 441. Continuation of MEDT 441 to cover hormones, isoenzymes, electrophoresis and toxicology.

MEDT 443

4 (4,0) S

Clinical Immunoematology: PR: Admission to Medical Technology Intern-

ship or C.I. Antigenic structure of red blood cells; related to crossmatching of blood, antibody screening, other blood banking procedures.

MEDT 444 **4 (4,0)**
Advanced Hematology and Coagulation: PR: Admission to the Medical Technology Internship or C.I. Formed elements of the blood; platelet function, hemostasis, the methodology for studying this mechanism are presented; relationship to the clinical condition of human patients emphasized.

MEDT 445 **2 (2,1)**
Clinical Mycology: PR: Admission to Medical Technology Internship or C.I. Instruction and laboratory practice in the isolation and identification of fungi associated with mycotic infections of man.

MEDT 446 **3 F,W,S**
Clinical Parasitology: PR: Admission to Medical Technology Internship or C.I. Instruction and laboratory practice in the examination and study of clinical material for the detection and identification of animal parasites.

MEDT 447 **3 (3,0)**
Clinical Serology: PR: Admission to Medical Technology Internship or C.I. Serological methods used in diagnosis, study of disease; interpretation of abnormal results.

MICROBIOLOGY

MICR 200 **4 (3,4) F,S**
General Microbiology: PR: A college course in chemistry and 8 hours of biological science. Fundamentals of microbiology, microbial morphology, metabolism and laboratory techniques.

MICR 210 **3 (1,4)**
Culture Media and Reagents: PR: MICR 200. Preparation of differential, selective and enrichment media; reagents used in microbiology; instrumentation used in culture media preparation.

MICR 300 **5 (3,6) W**
Biology of Microorganisms: PR: MICR 200; CR: CHEM 321 or CHEM 113. Concepts and experimental methods in microbiology.

MICR 320 **4 (3,4) F,S**
Pathogenic Microbiology: PR: MICR 300 or C.I. Microorganisms producing disease in man and other animals; means of transmission; protection against disease.

MICR 381 **3 (2,2) F**
Immunology: PR: One year of biological sciences. Basic principles of the immune reaction; antigens, antibody formation, hypersensitivity and autoimmunity.

MICR 382 **3 (1,6) W**
Serology: PR: MICR 381. Laboratory exercises in the production of antibodies, agglutination and precipitin reactions; quantitative techniques and isohemoagglutination.

MICR 410 **4 (1,6) W, even years**
Diagnostic Microbiology: PR: MICR 320. Techniques used in identifying bacteria which are pathogenic to man.

MICR 422 **4 (3,4) W, odd years**
Microbiology of Water and Waste: PR: MICR 300 or C.I. Organisms in water and their relationship to production and distribution of potable water; disposal of sewage.

MICR 430 **4 (3,4) S**
Microbial Physiology: PR: MICR 300 and CHEM 442. Relationship between structure and function in microorganisms.

MICR 440 **4 (3,4) W, odd years**
Determinative Microbiology: PR: MICR 300. Microbial classification, rules

of nomenclature, bacterial code and identification of species.

- MICR 451** **4 (3,4) W, even years**
Microbial Ecology: PR: BIOL 350 and MICR 300. Study of the roles of microbes in the environment.
- MICR 485** **4 (3,3)**
Medical Mycology: PR: MICR 300 or C.I. Etiology, mycology and clinical aspects of fungal induced human diseases.
- MICR 524** **3 (3,0) S, even years**
Infectious Process: PR: MICR 300 or C.I. Discussion of current theories of the infectious process and the response of cells and tissue to infection.
- MICR 570** **4 (3,4)**
Virology: MICR 300 and CHEM 442. Nature of viruses and Rickettsiae, including their structure, propagation, isolation and identification. Special project is required.
- MICR 581** **4 (2,4) F, even years**
Applied Microbiology: PR: MICR 300 or C.I. Microbiology of consumer products: role of microorganisms in world food production and deterioration of consumer products; quality control.
- MICR 633** **4 (4,0) W, even years**
Microbial Metabolism: PR: C.I. Relationship between microbial metabolism and principal cellular activities, emphasizing transport, respiration, differentiation, and syntheses.

MUSIC

- MUS 100** **0 (3,0) F,W,S,Su**
Music Forum: A series of special musical events required of music majors. Includes lectures and recitals by faculty, students, and guest artists.
- MUS 104** **1 (1,1) F,W,S,Su**
Secondary Performance: Private and/or class instruction. Credit applicable toward music degree if not in student's principal performing medium; open to non-music majors. May be repeated for credit.
- MUS 105** **1 (0,2) F,W,S,Su**
Class Piano I: Class instruction for beginning piano students. Not open to music majors whose major performing medium is piano. May be repeated for credit.
- MUS 106** **1 (0,2) F,W,S,Su**
Class Piano II: PR: MUS 105 or C.I. Not open to music majors whose major performing medium is piano. May be repeated for credit.
- MUS 107** **1 (0,2) F,W,S,Su**
Class Piano III: PR: MUS 106 or C.I. Preparation for the piano proficiency examination. May be repeated for credit.
- MUS 108** **1 (1,1) F,W,S,Su**
Class Piano IV: PR: MUS 107 or C.I. Individualized instruction. Credit applicable toward music degree by non-piano majors; open to non-music majors. May be repeated for credit.
- MUS 201** **4 (2,4) F**
Musicianship: PR: MUS 205 or Satisfactory placement test. Required of music majors; writing, performance, analysis of music; emphasis on present-day experimental music and twentieth century music.
- MUS 202** **4 (2,4) W**
Musicianship: PR: MUS 201. Continuation of MUS 201.
- MUS 203** **4 (2,4) S**
Musicianship: PR: MUS 202. Continuation of MUS 202.
- MUS 204** **4 (1,7) F,W,S,Su**
Principal Performance I: PR: Faculty jury. Required of music majors; private

and class lessons plus assigned major performing organization and chamber music ensemble. May be repeated for credit.

MUS 205 **4 (4,0) F,W**

Music Fundamentals: Introduction to basic musical elements, development of the student's skills in writing, performance, and analysis. Credit not applicable toward music degree.

MUS 301 **4 (2,4) F**

Musicianship: PR: MUS 203. Required of music majors; continuation of MUS 201-203; writing, performance, analysis of music of seventeenth-nineteenth centuries as related to present-day music.

MUS 302 **4 (2,4) W**

Musicianship: PR: MUS 301. Continuation of MUS 301.

MUS 303 **4 (2,4) S**

Musicianship: PR: MUS 302. Continuation of MUS 302.

MUS 304 **4 (1,7) F,W,S,Su**

Principal Performance II: PR: Necessary competence at MUS 204 level determined by faculty jury. Required of music majors. May be repeated for credit.

MUS 305 **1 (0,4) F,W,S,Su**

Major Performing Organizations: PR: C.I. Open to all students. Study and performance of music for large ensembles. May be repeated for credit; not applicable toward music degree.

MUS 306 **1 (0,3) F,W,S,Su**

Chamber Music Ensembles: PR: C.I. Open to all students. Study and performance of music for small ensembles. May be repeated for credit; credit not applicable toward music degree.

MUS 310 **3 (2,1) F,W,S,Su**

Recorder I: Open to all non-music students. Class instruction in beginning recorder playing.

MUS 311 **2 (1,1) F,W,S,Su**

Recorder II: Class instruction in advanced recorder solo and ensemble playing. PR: Open to music students; and non-music students who have taken MUS 310.01 and C.I.

MUS 312 **3 (0,3) F,W,S,Su**

Music in Society: Social functions of music and its relationships with other arts. No prerequisite.

MUS 320 **4 (3,1) F,W,S,Su**

Enjoyment of Music: PR: Open only to non-music majors. Instruction designed to develop an understanding of basic musical principles and improved techniques for listening to music.

MUS 401 **4 (2,3) F**

Musicianship: PR: MUS 303. Required of music majors; continuation of MUS 301-303; writing, performance, analysis of Western European music to 1600 as related to present-day music.

MUS 402 **4 (2,3)**

Musicianship: PR: MUS 401. Continuation of MUS 401.

MUS 403 **4 (2,3)**

Musicianship: PR: MUS 402. Continuation of MUS 402.

MUS 404 **4 (1,7) F,W,S,Su**

Principal Performance III: PR: Satisfactory piano proficiency examination and necessary competence at MUS 304 level determined by faculty jury. Required of music majors. May be repeated for credit.

MUS 474 **1,6 (0,3-13) F,W,S,Su**

Directed Experience: PR: C.I. Required of music majors; experience in com-

municating music under qualified teachers. Credit determined by number of hours assigned per week. May be repeated.

MUS 484

4 (1-7) F,W,S,Su

Principal Performance IV: PR: Necessary competence at MUS 404 level determined by faculty jury. Required of music majors. May be repeated for credit.

MUS 501

3

Graduate Musicianship: PR: C.I. The study of music from various style periods; writing, performance, and analysis of music; may be repeated for credit.

MUS 504

2-4

Graduate Performance: PR: C.I. Amount of credit determined by audition. May include both principal and secondary performance areas. May be repeated for credit.

P

PHILOSOPHY

PHI 105

4 (4,0) W

Critical Thinking: An examination of fallacies and other logical abuses in conjunction with an analysis of traditional modes in an attempt to encourage meaningful thought and usage.

PHI 205

4 (4,0) F,W,S,Su

Formal Logic I: Analysis of logical form and of procedures used in deductive inference, of the kind underlying mathematical reasoning.

PHI 221

4 (4,0) F,W,S

Introduction to Philosophy: Inquiry into the meaning and justification of fundamental ideas and beliefs concerning reality, knowledge, and values; application to relevant topics in ethics, religion, and politics.

PHI 301

4 (4,0) F

Ancient Philosophy: Foundations of Western philosophy in ancient Greek thinking about man and nature, including the pre-Socratics, Socrates, Plato, Aristotle.

PHI 302

4 (4,0) W

Medieval and Early Modern Philosophy: Faith, reason and skepticism in the development of philosophy from the Scholastics to Hume; Continental Rationalism and British Empiricism.

PHI 303

4 (4,0) S

Late Modern Philosophy: Relativism and atheism in the development of philosophy from Kant to Nietzsche; the challenge of science and religion to philosophy.

PHI 305

4 (4,0) S

Formal Logic II: PR: PHI 205. Systematic study of propositional and first-order predicate logic; logic systems and axiomatic methods; problems of meta-theory, including consistency, completeness and decidability.

PHI 312

4 (4,0) F

Existentialism: Study of existentialist analysis and criticism of the human situation as found in the writings of such philosophers as Kierkegaard, Nietzsche, Heidegger, Sartre, and Camus.

PHI 314

4 (4,0) W

Problems in Contemporary Philosophy: Prominent issues and trends in 20th-century philosophy, excluding Existentialism.

PHI 331

4 (4,0) F,S

Ethics: An examination of the nature of moral problems, judgments and principles with an emphasis on recent formulations in ethical theory.

- PHI 341** **4 (4,0) W**
Aesthetics: An investigation into the nature of human artistic experience with special reference to the problems of creativity.
- PHI 401** **4 (4,0)**
Social Philosophy: Philosophically analyzes and evaluates selected issues arising from interaction of the individual, society, and the state.
- PHI 405** **4 (4,0) W**
Philosophy of Religion: An examination of basic ideas, beliefs, attitudes and functions of religion; the significance of religion in human experiences.
- PHI 409** **4 (4,0) S**
Philosophy of Science: An examination of the conceptual foundations and methodology of modern science.
- PHI 461** **4 (4,0)**
The Secular View: Examination of the philosophical foundations of secularism and of literary and political humanism, based on the work of Erasmus, Montaigne, Voltaire, Hobbes, Locke, and Rousseau.

PHYSICS

- PHYS 100** **4 (4,0) F,S**
Physical Science: Familiarization with the basic laws governing our universe and man's physical environment. Satisfies science requirements of the Environmental Studies Program.
- PHYS 103** **4 (4,0) F,S**
Astronomy I: Descriptive survey of solar system, galaxies and universe. Physical properties of stars deduced from their radiation. Night observation sessions. Appropriate for the Environmental Studies Program.
- PHYS 201** **4 (3,3) F,W**
College Physics I: PR: Two years of high school mathematics. Lectures and laboratory experiments, with special application to life sciences: mechanics, thermodynamics, electricity, magnetism, optics, sound, quantum and nuclear physics.
- PHYS 202** **4 (3,3) W,S**
College Physics II: PR: PHYS 201 or C.I. Continuation of College Physics sequence.
- PHYS 211** **4 (4,0) F**
General Physics I: CR: MATH 321. The first course in a sequence covering the basic principles of classical mechanics, thermodynamics, electricity, magnetism, optics and modern physics.
- PHYS 212** **4 (4,0) W**
General Physics II: PR: PHYS 211; CR: MATH 322. Continuation of the General Physics sequence.
- PHYS 213** **4 (4,0) S**
General Physics III: PR: PHYS 212; CR: MATH 323. Continuation of the General Physics sequence.
- PHYS 282** **1 (0,3) W**
General Physics Laboratory I: PR: PHYS 211. Laboratory experimentation and instruction covering selected topics in physics.
- PHYS 283** **1 (0,3) S**
General Physics Laboratory II: PR: PHYS 282 or C.I. Continuation of physics laboratory instruction.
- PHYS 301** **3 (1,3) F**
Project Physics I: "Hands-on" lecture-laboratory course, particularly for Elementary Education majors and prospective Junior High science teachers. Topics range from naked-eye astronomy to radioactive dating.

- PHYS 302** **3 (1,3) W**
Project Physics II: PR: PHYS 301 or C.I. Continuation of Project Physics sequence.
- PHYS 303** **3 (1,3) S**
Project Physics III: PR: PHYS 302 or C.I. Continuation of Project Physics sequence.
- PHYS 304** **4 (4,0)**
Astronomy II: PR: PHYS 103 or equivalent. A continuation of PHYS 103 with emphasis on stellar and galactic evolution and recent discoveries in astronomy. Appropriate for the Environmental Studies Program.
- PHYS 308** **3 (3,0) W,Su**
Physics of Science Fiction: Study and discussion of physical principles which form the basis of selected science fiction themes.
- PHYS 311** **4 (4,0) F**
Intermediate Physics I: PR: PHYS 213 or C.I.; CR: MATH 324. First course in a sequence covering mechanics, vectors, coordinate transformations, rigid-body dynamics, electrostatics, electrodynamics, Maxwell's equations, special relativity, radiation, atomic, nuclear, and solid state physics, wave guides, physical optics, wavemotion, quantum statistics in thermodynamics, and kinetic theory.
- PHYS 312** **4 (4,0) W**
Intermediate Physics II: PR: PHYS 311 or C.I.; CR: MATH 331. Continuation of the Intermediate Physics sequence.
- PHYS 313** **4 (4,0) S**
Intermediate Physics III: PR: PHYS 312 or C.I.; CR: MATH 331. Continuation of the Intermediate Physics sequence.
- PHYS 314** **4 (4,0) F**
Intermediate Physics IV: PR: PHYS 313 or C.I. Continuation of the Intermediate Physics sequence.
- PHYS 315** **4 (4,0) W**
Intermediate Physics V: PR: PHYS 314 or C.I. Continuation of the Intermediate Physics sequence.
- PHYS 335** **3 (3,0) W**
Electronics: PR: PHYS 212; CR: MATH 331, or C.I. Basic DC and AC circuit analysis. Theory of semiconductors and transistors, rectification, amplification, oscillation. Small signal analysis and circuit design.
- PHYS 343** **4 (3,2) S**
Computer Methods in Physics I: PR: PHYS 211 and COMP 102 or C.I. Non-analytical problems in physics and astronomy, supplementary to the Physics 211, 212, 213 sequence, solved by approximation methods with computer assistance.
- PHYS 344** **3 (3,0) W,Su**
Modern Physics: CR: MATH 331, PR: PHYS 354. Selected topics in atomic, nuclear, molecular, and solid state physics. A study of spectroscopy, X-rays, nuclear radiation and cosmic rays.
- PHYS 345** **3 (3,1)**
Astrophysics: PR: PHYS 213 or equivalent. Theories of evolution of stars and planets, models of stellar interiors, properties of stellar atmospheres and spectra. Night sessions for photography.
- PHYS 354** **3 (3,0) F,S**
Optics and Wave Motion: CR: MATH 324, PR: ENGR 320 or PHYS 213. Selected topics in optics, acoustics, and related wave phenomena. A study of reflection, refraction, interference, and diffraction.
- PHYS 380** **4 (3,3) F,S,Su**
Physics of Scientific Instruments: PR: PHYS 202 or C.I. A lecture-laboratory course in fundamentals of physics related particularly to the application,

operation and limitations of various scientific instruments.

PHYS 381 **4 (2,4) F**

Physics Laboratory — Electronics: PR: PHYS 380 or C.I. Lecture and laboratory work stressing electronic principles through the study of test equipment, power supplies, amplifiers, oscillators, and pulse circuits.

PHYS 382 **4 (0,6) W**

Intermediate Physics Laboratory I: PR: PHYS 213 or C.I. Laboratory work in basic measurements of physical constants; intermediate level experiments in electronics, modern physics, nuclear physics, optics and solid state physics.

PHYS 383 **4 (0,6) S**

Intermediate Physics Laboratory II: PR: PHYS 382 or C.I. Continuation of physics laboratory instruction.

PHYS 407 **4 (4,0)**

Biophysics: PR: PHYS 202 or C.I. Physics of biosystems, viewed as optical control systems with constraints imposed by energy transfer mechanisms and examined by considering energy, information and cybernetics.

PHYS 443 **3 (2,2)**

Computer Methods in Physics II: PR: PHYS 311 and COMP 102 or C.I. Examples and problems in physics from classical mechanics, electromagnetic theory and wave mechanics are solved using numerical techniques with computer assistance.

PHYS 451 **3 (3,0)**

Optics: PR: PHYS 354 or C.I. A study of modern approaches to refraction, interference, diffraction, polarization, scattering, absorption and stimulated emission, spectroscopy and lasers.

PHYS 461 **3 (3,0)**

Solid State Physics: PR: PHYS 314 or C.I. Properties of solids, crystal binding, free electron model, band theory of solids, Fermi surface, and solid state applications.

PHYS 471 **3 (3,0)**

Quantum Mechanics: PR: PHYS 314 or C.I. A study of the postulates of quantum mechanics, the Schrodinger equation, and an introduction to the statistics of many particle systems.

PHYS 473 **3 (3,0)**

Physics in Society: Physical processes related to development and stability of society. Topics selected from music, art, transportation, thermodynamics, cybernetics. Meets advanced ESP requirements: designed for non-majors.

PHYS 477 **3 (3,0)**

Nuclear Physics: PR: PHYS 344 or C.I. Nuclear force, structure, moments, and models. Alpha decay, beta decay, gamma-ray emission, nuclear reactions and applications of nuclear physics.

PHYS 481 **4 (0,6)**

Advanced Physics Laboratory: PR: PHYS 382 or C.I. Experiments in optics, electronics; atomic, molecular, nuclear, solid state physics; emphasis on design, data and scientific writing.

POLITICAL SCIENCE

PCL 201 **4 (4,0) F,W,S,Su**

American National Government: A study of the dynamics of American national government, including its structure, organization, powers, and procedures.

PCL 300 **4 (4,0) F,S**

State Government: A comparative study of American state governments and political processes with emphasis on Florida.

- PCL 302** **4 (4,0) F,W,S,Su**
Scope and Methods of Political Science: Introduction to the Scope and Methodology of contemporary political analysis. Topics include scope of the discipline, research design, and methods.
- PCL 303** **4 (4,0) F,W,S,Su**
Principles of Political Science: Basic concepts of political science and its development as a field with emphasis on areas of concern; analysis of major approaches to the study of politics.
- PCL 305** **4 (4,0) W,F**
Political Parties and Processes: PR: PCL 201 or C.I. Study of American politics with major emphasis upon the role, organization, functions, and processes of parties in the American political system.
- PCL 306** **4 (4,0) W**
Interest Groups and Political Movements: A study of the role of interest groups in the American political process and a comparison of varying political objectives and strategies used by the groups.
- PCL 308** **4 (4,0) F**
The American Presidency: PR: PCL 201 or C.I. Examination of the presidency as an institution and of the evolution in status, powers, administrative responsibilities, leadership and decision-making roles.
- PCL 310** **4 (4,0) W**
Congress and the Legislative Process: PR: PCL 201 or C.I. The nature, role, and functions of the legislative process; the dynamics of executive-legislative relations and resultant problems.
- PCL 312** **4 (4,0) S**
Minorities in American Politics: The past and contemporary roles of minority groups in the American political system; their impact upon the legislative, executive, and judicial processes.
- PCL 315** **4 (4,0) F**
Public Opinion: A substantive and theoretical study of public opinion; patterns of distribution, opinion formation, opinion measurement, policy linkages.
- PCL 316** **4 (4,0) W**
Electoral Behavior: Theoretical and substantive inquiry into U.S. electoral behavior: a study of the factors influencing participation and voting behavior.
- PCL 321** **4 (4,0) F,S**
International Relations: Analysis of the fundamental principles and factors affecting interstate relations; the foreign policy decision-making processes of states.
- PCL 322** **4 (4,0)**
World Political Geography: Analysis of the types and distributions of political systems, review of factors which affect relative power of diverse politics, areas of conflict and arbitration. (Same as GEOG 360).
- PCL 323** **4 (4,0) W,Su**
Contemporary International Politics: Application of the theory and fundamentals of international politics to contemporary world affairs with attention to the impact of current developments upon the international system.
- PCL 341** **4 (4,0) F,W,S,Su**
Comparative Politics: An analytical and comparative study of politics in other nations with emphasis upon the interrelationships of their social environments and political systems.
- PCL 342** **4 (4,0) F**
Nationalism: A Systematic Analysis: Theories of modern nationalism as a world-wide political phenomenon including problems of: nationalistic wars and rebellions, multi-nation states, trans-national organizations.

- PCL 343** **4 (4,0) F**
Politics of Developing Areas: An analysis of non-Western political systems with emphasis upon the problems of political, socio-economic, and cultural development.
- PCL 344** **4 (4,0) W**
Comparative Asian Politics: Selected Asian political systems will be examined in terms of the interaction between political institutions and processes and social, cultural and economic structures.
- PCL 347** **4 (4,0) F,W**
Contemporary Revolution and Political Violence: Theory and analysis of Political violence and fundamental change of political systems. Analysis of revolutions, counterrevolutions and conditions of political turmoil in the contemporary world.
- PCL 348** **4 (4,0) F,W**
Politics of Mexico, Central America and the Caribbean: Survey of politics and governments of the area. Influence of cultural, social and economic factors in each country's political development are considered.
- PCL 403** **4 (4,0) S**
Political Behavior: PR: PCL 201, 303 or C.I. A substantive and theoretical study of individual and group political behavior in the American political system.
- PCL 405** **4 (4,0) F**
Political Theory: PR: PCL 201 or C.I. Examination of various normative and empirical approaches to the study of political science, stressing contemporary developments in the field.
- PCL 406** **4 (4,0) F**
Contemporary Democratic Theory: PR: PCL 201 or C.I. Study of democratic theories emphasizing elitist theories, participatory democracy, citizen participation and the relevance of empirical research to democratic theory.
- PCL 413** **4 (4,0) S**
Metropolitan Politics: Analysis of political patterns, processes and issues in American communities.
- PCL 417** **4 (4,0) S**
Policy Problems of Metropolitan Areas: A course designed to provide an in-depth analysis of two or three basic policy areas; for example, transportation, education, welfare, crime, etc.
- PCL 418** **4 (4,0) F**
The Politics of Planning for Urban Communities: An examination of social, political, and economic factors influencing the urban planning process at local, state, and national levels.
- PCL 420** **4 (4,0) F**
Contemporary International Politics of Asia: Examination of the role of Asia in international politics and the foreign policies of major and secondary powers as they relate to trends in Asia.
- PCL 421** **4 (4,0) F**
International Politics of the Middle East: The external politics of the Middle East from a regional-global perspective with particular attention to the region's impact upon the relations of major powers.
- PCL 422** **4 (4,0)**
Inter-American Politics and Organizations: Examination of relations among American Republics. Special attention given the roles of the United States, the Organization of American States, and trade and aid arrangements.
- PCL 424** **4 (4,0)**
Political Sociology: Sociological analysis of political and para-political groups; socio-economic variables of voting behavior; power elites, societies and systems of government. (Same as SOC 420).

- PCL 425** **4 (4,0) S**
Political Party Behavior: In depth analysis of selected topics in political party behavior including: changes in Southern politics; urban parties in transition; political campaigns; the changing electorate.
- PCL 427** **4 (4,0) F**
American Foreign Policy: Analysis of the traditions and development of American foreign policy with emphasis on the role and policies of the United States in the contemporary world.
- PCL 428** **4 (4,0) W**
American Defense Policy: Study of policy evolution since World War II including consideration of the social and political costs involved and means of control.
- PCL 430** **4 (4,0) S**
International Organizations: The nature and growth of international agencies of cooperation. Attention focused on the problems and development of functional, regional, and universal organizations.
- PCL 432** **4 (4,0) F**
International Law I: An introduction to the nature, evolution and sources of international law and its role in interstate relations.
- PCL 433** **4 (4,0)**
International Law II: PR: PCL 432 or C.I. Examination of various subareas of International Law including maritime law, laws of the sea and seabed, air law, and the legal status of outer space.
- PCL 435** **4 (4,0) W**
Coercion in International Politics: An examination of the role of coercive techniques among states in a nuclear age including theories of nuclear strategy and deterrence.
- PCL 442** **4 (4,0) S**
Government and Politics of Great Britain: A survey of British government, society, and institutions, with emphasis on the growth and development of parliamentary democracy.
- PCL 443** **4 (4,0) W**
Government and Politics of the Soviet Union: Examination of the origins, institutions, and functioning of the Soviet political system, including the role and characteristics of the communist party of the Soviet Union.
- PCL 444** **4 (4,0) F**
Non-Western Politics: Examination of the political system of one or two non-western nations, including the relationship of socio-cultural and historical environment to the political system.
- PCL 447** **4 (4,0) S**
Political Socialization: PR: PCL 201 or C.I. Analysis of the quality and function of the recruitment and socialization processes. Identification of the agents and processes of political socialization.
- PCL 450** **4 (4,0) S**
American Public Policy: PR: PCL 201 or C.I. The American policy-making process with a focus upon contemporary problems including the malapportionment of societal power and social conflict.
- PCL 461** **4 (4,0) F**
Political Philosophy I: Study of the development of political and social ideas in Western thought from early Greece to the Renaissance.
- PCL 462** **4 (4,0) W**
Political Philosophy II: Renaissance to the 19th Century.
- PCL 463** **4 (4,0) S**
Political Philosophy III: Study of contemporary Western political and social thought in the 19th and 20th Centuries.

- PCL 471** **4 (4,0) F**
American Constitutional Law: PR: PCL 201 or C.I. The impact of judicial decision-making upon the growth of American political institutions and processes.
- PCL 473** **4 (4,0) W**
American Constitutional Law: PR: PCL 201 or C.I. The role of judiciary in the focusing and refinement of individual rights and civil liberties in American society.
- PCL 475** **4 (4,0) F**
Judicial Behavior: Study of Judicial Behavior emphasizing the role of courts as a bureaucratic structure. Consideration will be given to comparative judicial systems.
- PCL 480** **4-15 (0, 4-15) F,W,S,Su**
Political Science Internship: PR: C.I. Internship working with National, State County or Municipal governments. Assignments with selected civic organizations, elected or appointed official.
- PCL 550** **4 (4,0)**
Contemporary American Problems: PR: Senior or graduate standing. A public policy analysis of current problems encountered within the American political system and an examination of policy alternatives.
- PCL 600** **4 (4,0)**
Public Policy and Political Analysis: PR: C.I. An analysis of governmental action and models useful in policy analysis, stressing the pressures and procedures in decision making in a dynamic federal system.
- PCL 601** **4 (4,0)**
Public Policy and Political Research: PR: C.I. Approaches to problem solving in policy and political research, emphasizing the formulation of research strategies, sources of data, and data analysis.
- PCL 603** **4 (4,0)**
Statistical Models for Policy Analysis: PR: PCL 695 or C.I. Applications and analysis of problems in the use of statistical data. Emphasis on methods of data collection and analysis.
- PCL 612** **4 (4,0)**
Choice Theory: PR: C.I. Analysis of rational choice theories, game theoretic models, incremental decision making, with applications to problems of strategy and politics.
- PCL 614** **4 (4,0)**
The Environment of Policy Making: PR: C.I. Consideration of the impact of the intra-systematic and extra-systematic environment upon the decision making process.
- PCL 620** **4 (4,0)**
Public Opinion and Policy Formation: PR: C.I. A substantive and theoretical approach to understanding relationships between public opinion and public policy, including opinion/policy linkage models as well as opinion measurement.
- PCL 670** **4 (4,0)**
Issues in Urban Public Policy: PR: C.I. Study of characteristic policy issues which arise in urban political systems, the consideration of various public responses to those issues.
- PCL 672** **4 (4,0)**
Issues in State Public Policy: PR: C.I. Analysis of selected aspects of policy issues occurring in the states with attention given to both single state and comparative studies.
- PCL 673** **4 (4,0)**
Issues in National Public Policy: PR: C.I. Study of the establishment and evaluation of selected national issues and priorities, means of implementation, and impacts of government programs.

- PCL 675** 4 (4,0)
Issues in International Public Policy: PR: C.I. Analysis of domestic and foreign inputs influencing foreign policy formulation and execution, with extended analysis devoted to executive structures and decision making behavior.
- PCL 676** 4 (4,0)
Issues in Economic Public Policy: Examination from the perspectives of organization and politics of selected fiscal and monetary policy issues; emphasis on the limitations economic factors place upon policy making.

PSYCHOLOGY

- PSY 201** 4 (4,0) F,W,S,Su
General Psychology: The basic principles, theories, and methods of contemporary psychology.
- PSY 202** 4 (4,0) F,W,S,Su
General Psychology: PR: PSY 201. A continuation of PSY 201.
- PSY 300** 4 (4,0)
Applied Psychology: Applications of principles of psychology to personal adjustment, industry, and education.
- PSY 301** 5 (3,2) F,W,S,Su
Basic Learning Processes: PR: PSY 201 and PSY 202. A survey of theories and research findings from basic laboratory investigation of learning phenomena. Lec.-Lab.
- PSY 302** 5 (3,2)
Complex Human Learning: PR: PSY 201 and PSY 202. Selected topics from theories and research on complex human learning and problem solving. Lec.-Lab.
- PSY 303** 4 (4,0)
Physiological Psychology: PR: PSY 201 and PSY 202. Physiological bases of behavior.
- PSY 304** 5 (3,2)
Perception: PR: PSY 201 and PSY 202. Consideration of physical and psychological variables in perceptual phenomena. Lec.-Lab.
- PSY 305** 4 (4,0)
Psychological Measurement: PR: PSY 201, 202, and STAT 201. Theory of test construction and consideration of selected measures of psychological characteristics.
- PSY 306** 4 (4,0)
Psychology of Adjustment: Psychological principles of adjustment; application of psychology to problems in living.
- PSY 307** 4 (4,0)
Motivation: PR: PSY 201 and PSY 202. Psychological and physiological aspects of human motivation.
- PSY 308** 4 (4,0)
Social Psychology: PR: PSY 201 and PSY 202. Effects of social situations and social variables on the behavior of individuals.
- PSY 309** 4 (4,0)
Personality Theory: PR: PSY 201 and PSY 202. A survey of theory and research on the development of personality characteristics. Lec.-Lab.
- PSY 310** 4 (4,0)
Abnormal Psychology: PR: PSY 201 and PSY 202. Classification, causation, and treatment of deviant patterns of behavior.
- PSY 312** 4 (4,0)
Clinical Psychology: PR: PSY 309 and PSY 310. Consideration of psycho-diagnostics, behavioral modification techniques and clinical research. Lec.-Lab.

- PSY 313** 4 (4,0)
Developmental Psychology: PR: PSY 201 and PSY 202. The effects of genetic, psychological, maturational and social factors on behavior at various stages of development.
- PSY 314** 4 (4,0)
Industrial Psychology: PR: PSY 201, PSY 202, and STAT 201. Psychological principles of employee selection, training, morale.
- PSY 315** 4 (4,0)
Drugs and Behavior: PR: PSY 201. Effects of certain drugs upon the nervous system, behavior, and society. Causes of drug abuse and the impact on mental health.
- PSY 316** 2 (2,0)
Careers in Psychology: An examination of various career opportunities in Psychology including educational entry requirements, and related professional issues.
- PSY 321** 4 (4,0)
Principles of Behavior Modification: PR: PSY 301. An examination of the control of behavior through applications of principles and theories of learning. Examples are drawn from clinical and social psychology and from child rearing.
- PSY 330** 4
Psychology of Women: Examination of the psychological impact of changing sex roles on women in modern society. Topics include childrearing, working women, sex differences in personality and cognition.
- PSY 333** 4 (4,0)
Development of Language and Conceptual Behavior: PR: PSY 301. Normal ontogeny of language and conceptual behavior from infancy to adulthood; disorders of linguistic and conceptual development and their remediation; key theoretical interpretations.
- PSY 335** 4
Sexual Behavior: A discussion of physiological, social, and clinical aspects of human sexuality.
- PSY 340** 4 (4,0)
Environmental Psychology: PR: PSY 201, PSY 202, and STAT 201. An investigation theory and research relevant to the relationship between the physical environment and the behavior of man.
- PSY 343** 4 (4,0)
Educational Psychology: PR: PSY 201 and PSY 202. Application of psychological principles and research methods to classroom behavior and learning.
- PSY 353** 4 (4,0)
The Psychology of Racial Prejudice: Examination of literature relating to prejudice toward ethnic groups; effects of racism on individuals, development and maintenance of prejudice, and possible ways to reduce prejudice.
- PSY 370** 4 (4,0)
Interviewing and Counseling Techniques: PR: PSY 201, 202, and 309. A survey into practical experience of interviewing and counseling procedures in most facets of psychology and related fields.
- PSY 371** 4 (4,0) F,W
Psychology of Exceptional Children: Psychological problems of exceptional children including diagnosis, associated emotional problems, effects of institutionalization, special class placement, attitudes, and appropriate intervention methods.
- PSY 372** 4 (4,0)
Psychological Approaches to Mental Retardation: Psychological approaches to the problems of mentally retarded citizens including diagnosis, environment versus heredity, legal restrictions, institutionalization, as well as methods of behavioral remediation.

- PSY 373** **4 (4,0)**
Psychology of Aging: PR: PSY 202. An examination of basic psychological processes related to the aging process with emphasis on the applied implications of changes in perceptual-motor, social-emotional and cognitive-intellectual functioning.
- PSY 390** **4 (1,8)**
Undergraduate Field Work: Placement in a community agency for supervised experience in applications of psychology to community problems.
- PSY 403** **5 (3,2)**
Introduction to Neuropsychology: PR: PSY 303. Study of brain function with particular emphasis on human behavior. Lec.-Lab.
- PSY 405** **4 (4,0)**
History and Systems of Psychology: PR: PSY 301 and PSY 309. Historical development of psychology with emphasis on classical theoretical positions.
- PSY 411** **4 (4,0)**
Statistical Methods in Psychology: PR: One course in statistics. Standard scores, confidence intervals, sampling distributions, hypothesis testing, correlation and regression as applied to research in psychology.
- PSY 415** **5 (2,3)**
Individual Intelligence Testing: PR: PSY 305. A consideration of the nature of intelligence and its measurement. Supervised training in Stanford-Binet and Wechsler testing. Lec.-Lab.
- PSY 605** **4**
Psychological Testing I: PR: Graduate admission and C.I. Theory of test construction including test reliability and validity.
- PSY 606** **4 (4,0) W**
Applied Testing and Selection: PR: Graduation admission and C.I. Issues in selecting employees and an examination of currently used tests in industry.
- PSY 607** **4 (4,0) F**
Motivation, Training, and Performance Appraisal: PR: Graduate admission and C.I. Survey of the area of industrial motivation, training, and performance appraisal.
- PSY 608** **4 (4,0)**
Applied Problems in Industrial Psychology: PR: Graduate Admission and C.I. Thorough involvement and exposure to problems faced in industrial situations through case study approach.
- PSY 615** **4 (0,4)**
Counseling Practicum: PR: Graduate admission and C.I. Application of counseling techniques in a supervised setting.
- PSY 640** **4 (4,0)**
Consumer Psychology: PR: Graduate admission and C.I. Application of psychology to consumer behavior. Survey of research in product selection, markets, and advertising.
- PSY 641** **4 (4,0)**
Organizational Psychology: PR: Graduate admission and C.I. Survey of present theories in Organizational Psychology. Application of psychological research to organizational functioning.
- PSY 654** **2 (2,0)**
Psychology Practicum: PR: Graduate admission and C.I. Supervised practice in assessment and interm intervention techniques. (May be repeated for credit).
- PSY 655** **4-12**
Community Psychology Internship: PR: Graduate admission, 2nd year status and C.I. Supervised placement in community setting. (May be repeated for credit).

- PSY 656** **4-12**
School Psychology Internship: PR: Graduate admission, 2nd year status and C.I. Supervised placement in school setting.
- PSY 660** **4 (0,4)**
Industrial Psychology Practicum I: PR: Graduate admission and C.I. Supervised placement in school setting.
- PSY 661** **4 (0,4)**
Industrial Psychology Practicum II: PR: Graduate admission and C.I. Supervised research in industry.
- PSY 662** **4 (0,4)**
Industrial Psychology Practicum III: PR: Graduate admission and C.I. Supervised research in industry.
- PSY 667** **4 (4,0)**
Problems in Correctional Psychology: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in correctional settings. May be repeated for credit.
- PSY 668** **4 (4,0)**
Problems in Mental Health: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in Mental Health clinics. May be repeated for credit.
- PSY 669** **4 (4,0)**
Problems in School Psychology: PR: Graduate admission and C.I. An investigation of some of the major problems facing psychologists working in school systems. May be repeated for credit.
- PSY 670** **4 (4,0)**
Teaching and Training Evaluation: PR: Graduate admission and C.I. Evaluation of effective teaching methods and practicum experience.
- PSY 671** **4 (4,0)**
Individual Intelligence Testing: PR: Graduate admission, PSY 683 and C.I. A survey of commonly used individual tests used to measure intelligence of both children and adults.
- PSY 673** **4 (4,0)**
Mental Retardation: PR: Graduate admission, PSY 683, PSY 684, and C.I. Theory, research and remedial techniques dealing with mental retardation.
- PSY 675** **4 (4,0)**
Implementation and Evaluation: PR: Graduate admission and C.I. Strategies and procedures for evaluating programs in community and school settings.
- PSY 676** **4 (4,0)**
Clinical Psychopharmacology: PR: Graduate admission, PSY 673 and C.I. Physiological and clinical effects of various psychomimetic and psychoactive drugs.
- PSY 677** **4 (4,0)**
Learning Disabilities: PR: Graduate admission and C.I. Theory, research and remedial techniques dealing with learning disabilities and other factors interfering with learning such as motivation, language disorders and perceptual-motor deficits.
- PSY 680** **4 (4,0)**
Personality Testing: PR: Graduate admission, PSY 683, PSY 671 and C.I. Survey of commonly used individual and group personality techniques.
- PSY 681** **4 (4,0)**
Psycho-educational Diagnosis: PR: Graduate admission and C.I. Administration and interpretation of psychoeducational tests. Emphasis on evaluation of exceptional children.
- PSY 685** **4 (3,2)**
Developmental Psychology: PR: Graduate Admission and C.I. Psychological

aspects of development including intellectual, social and personality factors.

PSY 686

4 (4,0)

Clinical Intervention I: PR: Graduate admission and C.I. Various theories of counseling and their evaluated efficiency, including the problems of research in counseling techniques.

PSY 687

4 (4,0)

Clinical Intervention II: PR: Graduate admission. PSY 683 and C.I. Introduction to the principles and procedures of behavior modification as a clinical intervention technique.

PSY 688

4 (3,2)

Clinical Intervention III: PR: Graduate Admission, PSY 684 and C.I. Group and family counseling. Theory and Technique. Experimental group lab. Taught in conjunction with PSY 654.

PSY 689

4 (3,2)

Clinical Intervention IV: PR: PSY 671, 680, 681, 686, 687, 688, and C.I. Dynamic psychotherapy; integration of various psychological assessment devices; relationship of evaluation to therapy.

PUBLIC ADMINISTRATION

PAD 324

4 (4,0)

Urban Geography: The city as a geographical phenomenon created by human efforts, its historical development; patterns of land use as related to economic, sociological and political influences. (Same as GEOG 350).

PAD 350

4 (4,0) F,W

Introduction to Public Administration: PR: C.I. Analysis of administrative theories and the process of implementing public policies in a democratic society.

PAD 411

4 (4,0)

Public Policy Administration: Problems of values, interests, and objectives and their impact on execution of public programs, stressing the relationship between policies and administration.

PAD 414

4 (4,0) F

Metropolitan Administration: PR: PAD 350 or C.I. Study of the formal and informal sociopolitical structures that govern urban areas; emerging patterns of government, and management practices in urban and suburban settings.

PAD 416

6-12 (0,12)

Public Administration Internship: PR: C.I. Internship in municipal, county, state or federal government, including assignments in such fields as personnel, planning, budget and fiscal, procurement and public safety.

PAD 440

4 (4,0)

Comparative Public Administration: PR: C.I. An analysis of administrative structures and processes of selected countries, including an evaluation of the influence of economic, social and political environment on bureaucratic functions and the role of the executive.

PAD 441

4 (4,0) F,S

Comparative Public Administration II: PR: C.I. A case study approach to the problems of administration in diverse political environments stressing patterns or organization, personnel systems, field services and administrative style.

PAD 510

4 (4,0)

Administrative Problems of the Metropolitan Community: PR: PAD, 350, or C.I. Senior or graduate standing. This course focuses on the processes of policy formulation and execution in the metropolitan community, including governmental restructure and area-wide policy formulation and implementation.

PAD 605

4 (4,0)

Bureaucracy and Public Policy: PR: C.I. A critical examination of the bureau-

cracy and the development and impact of bureaucratic behavior and structure upon public administration.

PAD 611 **4 (4,0)**

Planning and Organization for Economic and Social Development: PR: C.I. The purpose and use of economic and social planning, examining theories of development, regional analysis, methods and administration of planning, and evaluation of plan performance.

PAD 630 **4 (4,0)**

Policy Analysis and Administration: PR: C.I. Program analysis and organization structure as policy tools, examining the implementation of differential policy and the administrator as policy maker and change agent.

PAD 633 **4 (4,0)**

Budgeting as a Policy and Program Instrument: PR: C.I. Budgets as planning/programming documents, stressing the relationships of policy and budgetary decisions, problems in grantsmanship and revenue decision making, program budgeting, PPBS, and incrementalism.

PAD 636 **4 (4,0)**

Labor-Management Relations in the Public Sector: PR: C.I. A broad perspective of management-employee relations in the public sector including grievance procedures, fact finding, collective bargaining, mediation and arbitration.

PAD 677 **4 (4,0)**

Issues in Public Administration: PR: C.I. Analysis of both substantive and theoretical issues confronting the broad spectrum of contemporary public administration; consideration of the "new public administration" movement.

Q

QUANTITATIVE BUSINESS ANALYSIS

QBA 312 **4 (4,0)**

Quantitative Analysis I: PR: MATH 320. Mathematical models and techniques used in the formulation, solution, and analysis of business problems. Linear, non-linear and dynamic programming, network, decision tree analysis; queueing, inventory, and decision theory. Computer applications.

QBA 313 **4 (4,0)**

Quantitative Analysis II: PR: QBA 312. Continuation of QBA 312.

QBA 450 **4 (4,0)**

Business Simulation: PR: MATH 320 and COMP 310. An introduction to simulating various aspects of the business enterprise. Topics include the simulation modeling process, applicable simulation languages, and model formulation, analysis, and validation.

QBA 451 **4 (4,0)**

Quantitative Applications to Business Problems: PR: QBA 313 or C.I. Applications of quantitative analysis to complex business problems. Emphasis is on analyzing specific problem situations and deciding on appropriate quantitative techniques to be applied.

R

RADIO/TELEVISION

RTV 337 **4 (1,3)**

Broadcast Techniques: Introduction to the radio and television studio. Utilization of studio operating techniques and equipment (consoles, recorders, cameras, etc.) for use in educational and commercial broadcasting.

- RTV 340** **4 (4,0)**
Radio Production: PR: RTV 337 or C.I. The production of music (live and recorded), talk, interview, discussion, sports, and documentary including performance (talent and announcing) and direction.
- RTV 341** **4 (4,0)**
Television Production: PR: RTV 337 or C.I. Emphasis on the coordination of talent, cameras, visuals, audio and lighting with the dramatic values of the presentation.
- RTV 342** **4 (4,0)**
Broadcast Journalism I: PR: JRN 319 or C.I. Historical, legal, and quasi-legal influences on broadcast news; introduction to news sources, writing and interviewing techniques for radio-television news.
- RTV 343** **4 (4,0)**
Television Talent Techniques: A study of communication problems on camera and microphone. Development of performance skills in announcing, interviewing, narrating, and reporting.
- RTV 344** **4 (4,0)**
Broadcast Continuity and Programming I: Practice in the preparation of written commercial copy for radio and television. Examination of program practices and traffic systems.
- RTV 345** **4 (4,0)**
Films for Television: Principles and practices of 8mm and 16mm film usage within the television industry.
- RTV 347** **4 (4,0)**
Television Scene Design: PR: RTV 337 or C.I. Study, application, and creative utilization of staging, lighting, graphics, special effects, costuming, and make-up for television production.
- RTV 355** **4 (4,0)**
Foundations of Broadcasting: Nature of the media, the mechanics of operation, history, economics, programming, and internal and external control.
- RTV 441** **4 (4,0)**
Television Directing: PR: RTV 341. The planning, preparation and directing of programs with emphasis on dramatic values of composition, movement, position, action, timing, pacing, climax, ascendant and descendant values; integration of the parts to the whole.
- RTV 444** **4 (4,0)**
Broadcast Continuity and Programming II: PR: RTV 344 or C.I. Preparation of documentaries and dramatic writing for television and radio.
- RTV 445** **4 (1,3)**
Television Film Production: PR: C.I. Planning and preparation of filmed documentaries, public service and commercial productions. (Laboratory hours to be arranged).
- RTV 446** **4 (4,0)**
Radio, Television and Society: A study of the impact of electronic media upon the habits, customs and thinking of our times. Considerations of internal media problems.
- RTV 447** **4 (4,0)**
Television Film Documentary: PR: C.I. Historical developments, styles, and production techniques of the television film documentary.
- RTV 448** **4 (4,0)**
Broadcast Regulations: PR: RTV 355 or RTV 342. Federal, state, local and self-regulator agencies and practices which govern electronic media.
- RTV 450** **4 (4,0)**
Broadcast Journalism II: PR: RTV 342. Principles and practice of news preparation for electronic media.

- RTV 451** **4 (4,0)**
Radio-Television Advertising: PR: JRN 464 or C.I. Radio and television as advertising media; advertisers' demands and budget; appropriate programs for the sponsors' needs; writing of commercial continuity.
- RTV 452** **4 (4,0)**
Broadcast Criticism: Evaluation and criticism of past and present radio and television programs, policies, and critics. Concentration on the problem of criteria development.
- RTV 453** **4 (4,0)**
Educational Television: A study of radio and television in public education. Emphasis on the development and status of public broadcasting.
- RTV 454** **4 (4,0)**
Instructional Broadcasting: Learning theory applied to the creation, production, and dissemination of lessons via electronic media. Introduction to and practicum in radio and television studios as well as lesson presentation.
- RTV 455** **4 (4,0)**
International Broadcasting: Comparative analysis of national broadcast systems. World broadcasting as a social, political and economic force.
- RTV 458** **4 (4,0)**
Broadcast Management: PR: RTV 448. Consideration of broadcast management problems in station operations at the local, regional, and national levels.

RADIOLOGIC TECHNOLOGY

- RTE 340** **3 (3,0)**
Fundamentals of Radiologic Technology: PR: Admission to the professional phase of the RTE program or C.I. Historical science of radiology. Fundamentals of radiation, terminology, procedures, protection, patient care, professional ethics and medio-legal aspects as applied to radiology.
- RTE 342** **3 (0,30)**
Directed Clinical Education I: CR: RTE 340. Supervised clinical practice in the usage of radiation exposures, protection and departmental procedures with film critique.
- RTE 350** **4 (4,0)**
Radiographic Procedures: PR: C.I. Radiographic anatomy and physiology with related positioning. Manual and automatic processing and film critique.
- RTE 352** **3 (0,28)**
Directed Clinical Education II: PR: RTE 342, CR: RTE 350. Supervised clinical practice in more advanced radiographic techniques, positioning, and darkroom procedures.
- RTE 360** **4 (4,0)**
Radiographic Quality Control: PR: C.I. Survey of medical and surgical disease and usage of radiographic accessories related to disease, patient habitus, technique variations including darkroom control and film critique.
- RTE 362** **3 (0,28)**
Directed Clinical Education III: PR: RTE 352, CR: 360. Supervised clinical practice in radiographic procedures and positioning with emphasis on factors affecting quality control including darkroom procedures and equipment.
- RTE 380** **4 (4,0)**
Radiologic Technology Physics: PR: C.I. Electrical generation of ionizing radiation for diagnostic and therapeutic usage. Biological effects of radiation and advanced protection.
- RTE 382** **3 (0,28)**
Directed Clinical Education IV: PR: RTE 362, CR: RTE 380. Supervised clinical practice in advanced diagnostic procedures, techniques, equipment and protection. Film critique included.

- RTE 440** **3 (3,0)**
Special Radiographic Procedures: PR: Completion of all junior level RTE courses or C.I. Specialized and complex procedures, pharmacology, and systematic requirements of constant media with related nursing procedures. Film critique.
- RTE 442** **3 (0,30)**
Directed Clinical Education V: PR: RTE 382, CR: RTE 440. Supervised clinical practices with emphasis on special procedures, operating theatre, portable, intraoral and pediatric practicum.
- RTE 450** **4 (4,0)**
Therapy-Nuclear Medicine Techniques: PR: C.I. Variation of equipment, treatment planning, shielding protection and dose calculation. Usage of radioactive elements, detection and recording equipment as applied to medicine.
- RTE 452** **3 (0,16)**
Directed Clinical Education VI: PR: RTE 442, CR: RTE 450. Supervised clinical practice in therapeutic treatment of diseases and radioactive isotopes detection.
- RTE 454** **3 (0,16)**
Clinical Practice I: PR: C.I., CR: RTE 452. Clinical practice under general supervision in radiographic therapeutic and nuclear medicine procedures.
- RTE 460** **5 (5,0)**
Radiographic Education-Administration: PR: C.I. Evaluation and integration of radiographic theory, practice, communication, management; department and interdepartmental organization; equipment maintenance.
- RTE 462** **4 (0,16)**
Directed Clinical Education VII: PR: RTE 452, CR: RTE 460. Supervised clinical practice in radiographic advanced departmental procedures and management.
- RTE 464** **3 (0,18)**
Clinical Practice II: PR: RTE 454, CR: RTE 462. Clinical practice under general supervision in advance phases of radiographic procedure.
- RTE 480** **5 (5,0)**
Radiologic Technology Analysis: PR: C.I. Comprehensive review, evaluation and analysis of all phases of radiology. Preparation for continuing education, advancement and opportunities with survey of current trends and practices.
- RTE 482** **4 (0,16)**
Directed Clinical Education VIII: PR: RTE 462, CR: RTE 480. Supervised clinical practices in selected phases of radiographic procedures including advanced special procedures.
- RTE 484** **4 (0,18)**
Clinical Practice III: PR: RTE 464, CR: RTE 482. Clinical practices under general supervision in all phases of diagnostic, therapeutic, nuclear medicine, instructional and departmental procedures.

RELIGION

- REL 300** **4 (4,0) F,W,S**
The Hebrew and Christian Heritage: An examination of the Old and New Testaments as religious documents; a study of their emergence in the socio-political context of the Ancient Near East.
- REL 315** **4 (4,0) S**
Religions of China and Japan: A study of basic concepts in Shinto, Taoism, Confucianism, Buddhism, and Zen.
- REL 317** **4 (4,0) W**
Hinduism: A study of Hindu religious ideas and scriptures; the Vedas, the Upanishads, the Bhagvat Gita, and later works.

- REL 318** **4 (4,0) F**
Islam: An inquiry into the foundations and development of Islamic thought from earliest times to modern in various parts of the world.
- REL 319** **4 (4,0)**
Ancient Near Eastern Religions: An investigation of the principal religions of the ancient Near East with special emphasis on Mesopotamian, Canaanite, and Egyptian religions.
- REL 321** **4 (4,0)**
Religion in America: The effect of Puritan, Quaker, Anglican, and Catholic traditions on various regions; the phenomenon of evangelism; the rise of new sects such as Mormonism.
- REL 401** **4 (4,0) S**
Comparative Religion: An analysis of the nature of the religious experience in several of the world's major religions, showing their similarities and differences in thought, action, and fellowship.
- REL 441** **4 (4,0) W**
Modern Theology: Explores the revolution in religious thought prompted by Kierkegaard, Tillich, Barth, Niebuhr, and Bonhoeffer, and the secular trends suggested by Nietzsche, Altizer, Cox, and Hamilton.
- REL 471** **4 (4,0) S**
Mythology: An examination and interpretation of myths dealing with gods, divine heroes, and sacred events.
- REL 473** **4 (4,0) F**
The Religious Quest: A study of major religious statements from the desert Fathers to Kafka and Kazantzakis, and of the human and cultural circumstances from which they emerged.
- REL 477** **4 (4,0) W**
Mysticism: The modes and aims of the mystic, both Eastern and Western, as seen in art, music, and literature.



RESPIRATORY THERAPY

- RTH 301** **2 (0,20) W**
Clinical Practice I: PR: C.I. Basic equipment and patient care. IPPB Therapy. Cleaning, sterilization and maintenance procedures. Suction techniques.
- RTH 302** **2 (2,20) S**
Clinical Practice II: PR: C.I. Patient care with advanced respiratory equipment. Tracheostomy care. Advanced suction techniques and introduction to cardiopulmonary resuscitation.
- RTH 330** **3 (3,0) S**
Cardiopulmonary Resuscitation: PR: C.I. Resuscitative procedures in respiratory and cardiac emergencies. Airway maintenance. Defibrillation and post-resuscitative care. Drowning, underwater, aviation, and space physiology.
- RTH 331** **1 (0,3) S**
Cardiopulmonary Resuscitation Laboratory: CR: RTH 330. Adult intubation and available airways. Defibrillation practice.
- RTH 340** **3 (3,0) S**
Introduction to Pharmacology: Regulatory agencies and the regulation concerning the use of drugs. Review of pharmacological mathematics. Drug absorption and distribution in the human body.
- RTH 350** **3 (3,0) F**
Introduction to Respiratory Equipment: Fundamental functions of basic inhalation therapy equipment. Systems of oxygen storage. Safety precautions. Preparation for clinical practice.
- RTH 351** **1 (0,3) F**
Respiratory Equipment Laboratory: CR: RTH 350. Procedures in cleaning, sterilizing, maintenance, and repair of equipment.
- RTH 352** **3 (3,0) W**
Respiratory Equipment Function: PR: RTH 350. Function of advanced respiratory equipment. Arterial blood gas equipment. Prolonged mechanical ventilation. Bedside respiratory volumetric monitoring. Evaluation prior to and during weaning from respirator.
- RTH 353** **1 (0,3) W**
Respiratory Equipment Function Laboratory: CR: RTH 352. Care and sterilization of respirators. Calibration of blood gas analyzers. Care and standardization of bedside volumetric equipment.
- RTH 370** **3 (3,0) W**
Pulmonary Physiology: PR: CHEM 113 and PHYS 380. Normal ventilation of respiration. Response to gases and ions. Lung reflexes. Ventilatory and mechanical factors. Pulmonary circulation. Gas diffusion and transport. Manual respiratory adjustments.
- RTH 371** **1 (0,3) W**
Pulmonary Physiology Laboratory: CR: RTH 370. Experiments in ventilation mechanics, diffusion, circulation, and gas transport.
- RTH 380** **3 (3,0) S**
Respiratory Pathology: PR: ZOOL 324. Cellular pathology with emphasis on pathology of respiratory and cardiovascular systems.
- RTH 381** **1 (0,3) S**
Respiratory Pathology Laboratory: CR: RTH 380. Macro — and microscopic identification of respiratory diseases. Gross pathology.
- RTH 401** **2 (0,20) F**
Clinical Practice III: PR: C.I. Advanced cardiopulmonary resuscitation. Patient care with advanced cardiopulmonary equipment.
- RTH 402** **2 (0,20) W**
Clinical Practice IV: PR: C.I. Pulmonary functions studies. Care of patients

with medically treated diseases. Exposure to the functional role of the department administrator.

RTH 403 **2 (0,20) S**
Clinical Practice V: PR: C.I. Pediatrics. Pulmonary rehabilitation. Advanced pulmonary function testing. Application of diagnostic techniques in cardiopulmonary diseases and surgical techniques in open-heart, thoracic and general surgery.

RTH 410 **2 (1,2) S**
Pulmonary Rehabilitation: PR: C.I. The motor unit, exercise and fatigue. Therapeutic exercise, exercise in cardiopulmonary disease. Postural drainage, and vibration techniques.

RTH 420 **3 (3,0) S**
Respiratory Pediatrics: PR: C.I. Lung development, circulation, and respiratory regulation in fetus and newborn. Pulmonary function in congenital anomalies, infant infections, and hyaline membrane disease. New born resuscitation. Childhood respiratory diseases.

RTH 430 **3 (3,0) S**
Cardiopulmonary Therapy: PR: IT 370. Introduction to diagnostic and surgical techniques in thoracic and general surgery.

RTH 431 **1 (0,3) S**
Cardiopulmonary Therapy Laboratory: CR: RTH 430; PR: C.I. Student participation in cardio-catherterization and extra-corporeal circulation. Operating theatre observation. Extensive patient round and clinical observations.

RTH 440 **3 (3,0) F**
Medical Pharmacology I: PR: RTH 340. Drugs in cardiovascular diseases; effects on nervous system, gastrointestinal tract, and neuroeffectors. Depressants and stimulants; influence on metabolism and endocrines. Anesthetics, chemotherapy. Poisons and antidotes.

RTH 442 **3 (3,0) W**
Medical Pharmacology II: PR: RTH 440. Continuation of RTH 440.

RTH 460 **3 (3,0) W**
Medicine: PR: RTH 370. Disease states treated medically in conjunction with one or more modalities of respiratory therapy.

RTH 461 **1 (0,3) W**
Selected Topics in Respiratory Therapy: CR: RTH 460. Patient rounds and discussion regarding current trends and techniques in respiratory care.

RTH 462 **3 (3,0) F**
Pulmonary Function Studies: PR: C.I. Detailed procedures and tests to provide objective information for diagnosis of respiratory diseases.

RTH 463 **1 (0,3) F**
Pulmonary Function Laboratory: CR: RTH 462. Testing procedures and experiments in normal and abnormal respiratory functions.

RUSSIAN

RUS 101 **4 (4,1) F**
Elementary Russian Language and Civilization: Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to Russian culture.

RUS 102 **4 (4,1) W**
Elementary Russian Language and Civilization: PR: RUS 101 or equivalent. Continuation of RUS 101.

RUS 103 **4 (4,1) S**
Elementary Russian Language and Civilization: PR: RUS 102 or equivalent. Continuation of RUS 102.

- RUS 201** **4 (4,1) F**
Intermediate Russian Language and Civilization: PR: RUS 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of Russian culture.
- RUS 202** **4 (4,1) W**
Intermediate Russian Language and Civilization: PR: RUS 201 or equivalent. Continuation of RUS 201.
- RUS 203** **4 (4,1) S**
Intermediate Russian Language and Civilization: PR: RUS 202 or equivalent. Continuation of RUS 202 with greater emphasis on Russian civilization from the Middle Ages to the present.
- RUS 301** **4 (4,0)**
Russian Conversation: PR: RUS 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.
- RUS 303** **4 (4,0)**
Russian Composition: PR: RUS 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

S

SOCIOLOGY

Introductory Sequence: SOC 201, 202.

Theory and Research Sequence: SOC 304, 306, 307, 495.

Social Psychology Area: SOC 352, 353, 354, 451.

Anthropology Concentration: SOC 310, 311, 314, 315, 316, 402.

Social Work Concentration: SOC 340, 341, 342, 343, 412, 498.

Social Organization: SOC 325, 326, 333, 335, 407, 411, 416.

Social Deviance: SOC 331, 344, 345, 346, 348, 350.

- SOC 201** **4 (4,0) F,W,S,Su**
General Sociology: The basic principles, theories and methods of contemporary sociology.

- SOC 202** **4 (4,0) F,W,S,Su**
General Sociology: PR: SOC 201. Continuation of SOC 201.

- SOC 304** **4 (4,0) F,S**
The Development of Social Thought: PR: SOC 201. An overview of theories concerning the nature of man as a "social being." The nature of society from the beginnings of the scientific study of man's life to World War II.

- SOC 306** **4 (4,0) W**
Modern Sociological Thought: PR: SOC 201 and SOC 304. A study of major European and American contributors to, and schools of, modern sociology from World War II to the present.

- SOC 307** **4 (4,0) S**
The Sociology of Religion: Patterns in religious behavior in various societies with primary emphasis on myth, rite, taboo and festival as social phenomena.

- SOC 308** **4 (4,0) S**
Ethnology of North American Indians: A survey of the aboriginal cultures of North America with emphasis on the pre-contact cultural condition.

- SOC 309** **4 (4,0) F**
Plains Indians of North America: A study of the social and cultural history of the Indians of the North American High Plains.
- SOC 310** **4 (4,0) F,S**
Physical Anthropology and Archaeology: Introductory anthropological survey of physical anthropology and archaeology. Survey of man's place among primates, evolution, genetics, and prehistoric cultural development to the earliest civilizations worldwide.
- SOC 311** **4 (4,0) W,Su**
Social Anthropology: Framework and principles of sociocultural organization as exemplified among various cultures and ethnic groups.
- SOC 312** **4 (4,0) F,S**
Old World Prehistory: PR: SOC 310 and SOC 311. Fundamentals of archaeological discipline and research techniques. Surveys prehistoric record of cultural development from earliest times to rise of civilizations in all areas of Old World.
- SOC 313** **4 (4,0) W**
New World Prehistory: PR: SOC 310 and SOC 311. Essentials of New World archaeology, methods, and excavations. Surveys space-time framework of Native American Indian cultures and civilization from earliest times to A.D. 1500.
- SOC 314** **4 (4,0) W**
Archaeological Methods: PR: SOC 310 or 311. A seminar surveying archaeological field and laboratory techniques; i.e., bone preservation, zooarchaeology, ethnobotany, cataloguing, classification, and laboratory analysis.
- SOC 315** **4 (4,0)**
Physical Anthropology: PR: SOC 310 and SOC 311. The study of man as a product of the evolutionary process. Study and analysis of diversity among present human populations.
- SOC 316** **4 (4,0)**
Comparative Social Organization: PR: SOC 310 and SOC 311. Introduction to anthropological viewpoints on role of marriage, family, kin groups, and descent in the study of economic, political and ideological aspects of social organization.
- SOC 320** **4 (4,0) F**
Collective Behavior: PR: SOC 201. Analysis of relatively unstructured social situations such as disasters, mobs, crowds, mass hysteria, protests, fads and fashions.
- SOC 325** **4 (4,0) F,S**
Urban Sociology: PR: SOC 201. Historical roots of urbanization. Analysis and impact of community change on social organizations in modern industrial societies.
- SOC 326** **4 (4,0) F**
Rural Sociology: PR: SOC 201. Rural American life, its resources, and the problems of changing patterns of rural social structure.
- SOC 331** **4 (4,0) F,W,S,Su**
Social Problems: Analysis of major social problems such as mental disorders, sexual deviance, racial discrimination, poverty, community disorganization, and violence.
- SOC 333** **4 (4,0) F,S**
Social Psychology of Management. A social psychological analysis of processes relating to developing and changing social attitudes, work motivation and satisfaction, decision making, and social structure affecting managerial skills.
- SOC 335** **4 (4,0) S**
Social Institutions: PR: SOC 201. Social institutions, social differentiation, and social control, with emphasis on American and other modern societies.

- SOC 336** **4 (4,0) S**
Social Stratification: PR: SOC 201. Study of class, status and power; cultural variations in stratification system; patterns of mobility and change.
- SOC 340** **4 (4,0) F,S**
Social Welfare: A Social Institution: PR: SOC 201. An introduction to social welfare as an institution. The historical and philosophical development of social welfare as related to current social welfare objectives and programs.
- SOC 341** **4 (4,0)**
Social Work: Principles and Methods: PR: SOC 340. A theoretical consideration of the concepts and methods of social work practice and the values, activities and roles of social workers in various practice settings.
- SOC 342** **4 (4,0) W**
Government and Social Welfare: PR: SOC 340. The role of federal, state, and local government in social welfare. Laws, policy formulation, administration, and current issues will be examined.
- SOC 343** **4 (4,0) W**
The Community and Social Welfare: PR: SOC 340. The community as a social system in meeting human needs. Emphasis on private agencies, including their organization, functions, interrelationships and coordination with governmental agencies.
- SOC 344** **4 (4,0) W,Su**
Sociology of Deviant Behavior: PR: SOC 201. An examination of the nature, types and societal reactions to deviant behavior; special emphasis on the process of stigmatization and the emergence of deviant subcultures.
- SOC 345** **4 (4,0) W,S**
Juvenile Delinquency: Types of delinquent behavior found among juveniles; possible causes and ways society attempts to treat the various forms of delinquency.
- SOC 346** **4 (4,0) F,S**
Criminology: PR: SOC 201. Chief causes of anti-social behavior and current methods of prevention and reform. Effects of heredity and environment, prevalence of delinquency and crime, penal institutions.
- SOC 347** **4 (4,0) F**
Sociology of Mental Illness: A sociological examination of mental illness as a social problem; legal aspects of mental illness, and the mental health professions.
- SOC 348** **4 (4,0) F**
Sociology of Alcoholism: Introduction to the nature of alcoholism and review of its impact on society.
- SOC 349** **4 (4,0) F,W**
Human Growth and Development: PR: SOC 340. Development of an understanding of individual physical, mental and emotional growth from birth to death, recognizing social and cultural influences on the development.
- SOC 350** **4 (4,0)**
Interviewing in Social Work Practice: PR: SOC 340. Examination of interviewing as the primary medium through which social work is practiced with emphasis on the development of methods, skills and techniques.
- SOC 352** **4 (4,0) F,Su**
Race and Ethnic Minorities in the United States: Theoretical analysis of the emergence, maintenance and disruption of patterns of racial and ethnic stratification.
- SOC 353** **4 (4,0)**
Culture and Personality: PR: SOC 201. Theories of the variations in personality in relation to culture and group life in tribal modern societies.
- SOC 354** **4 (4,0)**
Sociology of Adolescence: An examination of the transition to adulthood in

various societies with primary emphasis on initiation and the contemporary American problems centering around the "adolescent crisis."

SOC 360 **4 (4,0) W**

Social Change: A Historical and Theoretical Approach: PR: SOC 201. Concerned with the context and essential sources of social development and change.

SOC 362 **4 (4,0)**

Contemporary Woman and Society: An interpretation of the changing role of woman in contemporary American society.

SOC 380 **4 (4,0)**

Afro-American Social Problems: A study of contemporary Afro-American social problems in the United States.

SOC 401 **4 (4,0) W,Su**

Sociology of Small Groups: PR: SOC 201. Study of interaction among individuals in social groups. Emphasis on the impact of interpersonal behavior on attitude dynamics, personality and self-concept, and decision-making.

SOC 402 **4 (4,0) F**

Method and Theory in Anthropology: PR: SOC 310 and SOC 311. Central methodological and theoretical concerns of anthropology in its emergence as a separate discipline and field of study.

SOC 403 **4 (4,0)**

Anthropological Linguistics: PR: SOC 310, SOC 311, and ENG 371. Survey of anthropological linguistic field techniques in non-native cultures and application of linguistic theories to study of socio-cultural systems.

SOC 405 **4 (4,0) W**

Medical Sociology: Social organization of medical care: patterns of morbidity and mortality, social epidemiology and effects of disease, utilization of medical services, medical practice, programs and organizations.

SOC 406 **4 (4,0)**

Sociology of Aging: PR: SOC 201. An examination of the sociological aspects of aging in America including the needs of the aged and community resources to meet their needs.

SOC 407 **4 (4,0) W,Su**

The Family: PR: SOC 201. The family viewed functionally as a distinct social and cultural complex in the contemporary United States. Topics include: mate selection, marriage, adjustment, parenthood, post marriage.

SOC 408 **4 (4,0)**

Social Change in Developing Areas: PR: SOC 201 and one course in statistics. A study of growth problems in the emerging nations of Africa and Latin America.

SOC 411 **4 (4,0)**

Population: Concerned with the study of human population, its distribution, composition and change.

SOC 412 **15 (2,13) S**

Field Experience and Seminar: PR: SOC 340, 341, 342, 343, 349, and 350. Supervised learning experiences in local social agencies relating theory and academic preparation with practice. Eight hours per week plus two hour weekly seminar.

SOC 416 **4 (4,0) W**

Human Ecology: PR: SOC 201. Principles governing the spatial distribution of human populations and activities within an area.

SOC 420 **4 (4,0)**

Political Sociology: Sociological analysis of political and para-political groups; socio-economic variables of voting behavior; power elites; societies and systems of government. (Same as PCL 424).

- SOC 433** **4 (4,0)**
Sociology of Occupations and Professions: An examination of occupations and professions from the sociological perspective. Emphasized are professional and occupational socialization, marginality and choice as well as women and work.
- SOC 435** **4 (4,0)**
Sociology of Education: PR: 201. This course examines the sociological dimensions of the educational institutions including the impact of social structure on learning and the role of education in social change.
- SOC 451** **4 (4,0)**
Contemporary Social Movements: PR: SOC 201. Causes and effects of various social movements in American society compared to large-scale upheavals throughout the West. Considers various theories of explanation.
- SOC 452** **4 (4,0)**
Sociology of Drug Abuse: PR: SOC 201 or C.I. The analysis of the socio-cultural elements of the drug culture. This course will survey problems, impact on society, and possible solutions.
- SOC 501** **4 (4,0)**
Proseminar in Sociology: PR: Six hours of Sociology and graduate level status or C.I. Study of culture, groups, demography, stratification, and culture and personality.
- SOC 502** **4 (4,0)**
Proseminar in Sociology: PR: Six hours of Sociology and graduate level status or C.I. Study of social change, institutions, large organizations, and internal behavior.

SPANISH

- SPA 101** **4 (4,1) F**
Elementary Spanish Language and Civilization: Designed to initiate the student to the major language skills; listening, speaking, reading, and writing, in addition to an introduction to Spanish culture.
- SPA 102** **4 (4,1) W**
Elementary Spanish Language and Civilization: PR: SPA 101 or equivalent. Continuation of SPA 101.
- SPA 103** **4 (4,1) S**
Elementary Spanish Language and Civilization: PR: SPA 102 or equivalent. Continuation of SPA 102.
- SPA 201** **4 (4,1) F**
Intermediate Spanish Language and Civilization: PR: SPA 103 or equivalent. Designed to continue development of language skills at the intermediate level, together with a review of grammar, idiomatic expressions, extensive reading, and further study of Spanish culture.
- SPA 202** **4 (4,1) W**
Intermediate Spanish Language and Civilization: PR: SPA 201 or equivalent. Continuation of SPA 201.
- SPA 203** **4 (4,1) S**
Intermediate Spanish Language and Civilization: PR: SPA 202 or equivalent. Continuation of SPA 202 with greater emphasis on Spanish civilization from the Middle Ages to the present.
- SPA 301** **4 (4,0) F**
Spanish Conversation: PR: SPA 203 or equivalent. Development of skills in conversation and comprehension through practice. This course may be repeated for credit. When repeated, credit will apply to general electives only.
- SPA 303** **4 (4,0)**
Spanish Composition: PR: SPA 203 or equivalent. Development of skills in composition. This course may be repeated for credit. When repeated, credit will apply to general electives only.

- SPA 311** **4 (4,0) F**
Survey of Spanish Literature I: PR: SPA 203 or equivalent. Main literary currents and works from the Middle Ages through the Renaissance and Baroque.
- SPA 312** **4 (4,0) W**
Survey of Spanish Literature II: PR: SPA 203 or equivalent. Main literary currents and works of the eighteenth and nineteenth centuries.
- SPA 313** **4 (4,0) S**
Survey of Spanish Literature III: PR: SPA 203 or equivalent. Main literary currents and works from the Generation of 1898 to the present.
- SPA 316** **4 (4,0)**
Survey of Latin-American Literature I: PR: SPA 203 or equivalent. Main literary currents and works from the colonial period to the nineteenth century.
- SPA 317** **4 (4,0)**
Survey of Latin-American Literature II: PR: SPA 203 or equivalent. Main literary currents and works of the nineteenth century.
- SPA 318** **4 (4,0)**
Survey of Latin-American Literature III: PR: SPA 203 or equivalent. Main literary currents and works of the twentieth century.
- SPA 321** **4 (4,0)**
Spanish Short Story: A study of representative 19th and 20th Century Spanish short stories and their authors.
- SPA 401** **4 (4,0)**
Spanish Phonetics and Diction: PR: SPA 303 or equivalent. Spanish phonology with emphasis on phonic groupings.
- SPA 402** **4 (4,0)**
Advanced Spanish Conversation: PR: SPA 301. Advanced conversation on directed topics from various disciplines: Literature, art, psychology, philosophy, music, business and the sciences.
- SPA 403** **4 (4,0)**
Advanced Spanish Composition: PR: SPA 303. Readings and written imitations of modern literary styles in the form of themes, sketches, poems and original stories.
- SPA 421** **4 (4,0)**
Golden Age Drama: PR: SPA 311. A study of the drama of the Golden Age with special emphasis on Lope, Tirso, Alarcon, and Calderon. The controversies on the Spanish theatre and its influence abroad.
- SPA 423** **4 (4,0)**
Cervantes I: PR: SPA 311. *Don Quixote* (Part I).
- SPA 424** **4 (4,0)**
Cervantes II: PR: SPA 311. *Don Quixote* (Part II).
- SPA 441** **4 (4,0)**
Nineteenth Century Spanish Literature: PR: SPA 312. Romanticism in Spanish literature.
- SPA 442** **4 (4,0)**
Nineteenth Century Spanish Literature: PR: SPA 312. The realistic and naturalistic novel in Spain.
- SPA 443** **4 (4,0)**
The Generation of 1898: PR: SPA 313. A study of the Generation's main authors and their works.
- SPA 451** **4 (4,0)**
Twentieth Century Spanish Literature: PR: SPA 313. The contemporary Spanish novel.

SPA 452 **4 (4,0)**
Twentieth Century Spanish Literature: PR: SPA 313. Contemporary Spanish drama and poetry.

SPA 481 **4 (4,0)**
Stylistics: PR: SPA 301 or equivalent. An intense study of textural criticism. An examination of the relationship between language and literature; explications and linguistic analysis of literary texts.

SPEECH

SPE 101 **3 (3,0) F,W,S,Su**
Fundamentals of Oral Communication: Use of the body and voice; participation in various speaking situations; planning, organizing, and delivering public speeches.

SPE 102 **1 (0,1) F,W,S,Su**
Speech Improvement Laboratory: Individual and group practice for students with speech fright and delivery problems. Recommended for all students who want to improve their speaking skills.

SPE 230 **3 (3,0) F,W,S**
Interpretation I: Analysis of thought, development of imagination; oral presentation of literary forms. (Recommended for students majoring in English and preparing to teach literature. (Same as THA 230).

SPE 261 **5 (4,3) W,Su**
English Phonetics and American Dialects: Physiological description and visual notation of speech sounds; regional dialects of American English.

SPE 262 **4 (4,0) W**
Psychology of Oral Communication: Psychological principles involved in the communicative process with application to individuals and groups.

SPE 265 **4 (4,0) W**
Voice and Articulation: PR: SPE 101. Introduction to the anatomy of voice and speech production. Analysis of voice and articulation of each student. Exercises for individual improvement.

SPE 330 **3 (3,0)**
Interpretation II: PR: THA 230 or C.I. Selecting and abridging literary material for platform use; preparation and presentation of program for special and general occasions. (Same as THA 330)

SPE 336 **3 (3,0)**
Oral Interpretation III: PR: THA 230. A study of the theories and practice in the techniques of interpretation, with particular emphasis on reading for children. (Same as THA 336).

SPE 360 **4 (4,0) F**
Argumentation and Debate: PR: SPE 101 or C.I. Study and practice in the preparation and delivery of argumentative speeches emphasizing argument, evidence and organization.

SPE 361 **4 (4,0) W,Su**
Persuasion: Motivation: PR: SPE 101 or C.I. A study of motivational factors involved in persuasive speaking to secure belief and action.

SPE 362 **4 (4,0) S**
Platform Speaking: PR: SPE 101 or C.I. Advanced training in selecting and organizing materials for various types of speeches. Practice in thinking and speaking before audiences; contemporary speeches as examples.

SPE 364 **5 (5,2) F**
Physiological Bases of Speech and Hearing: An introduction to the anatomical, physiological, and physical elements underlying the communication process.

SPE 365 **2 (2,0) F,W**
Parliamentary Procedure: Principles and rules governing participation and

leadership in the conduct of formal business meetings.

SPE 366 **4 (4,0) F**

Speech Composition: PR: SPE 101 or C.I. Study and practice in the preparation and delivery of speeches from manuscripts with emphasis on the development of oral style.

SPE 371 **4 (4,0) F,W,S**

Speech and Human Relations: Introduction to semantics; symbols and meaning and the relationship with human behavior.

SPE 473 **3 (3,0) W**

Directing Extracurricular Speech Activities: Debate, extemporaneous speech and other speech events; selection and training of contestants; interschool and intramural speech activities.

STATISTICS

STAT 201 **4 (4,0) F,W,S**

Principles of Statistics: Introduction to statistical concepts in modern society. Basic principles, frequency distributions, measures of location and dispersion, probability, probability distributions, statistical inference.

STAT 301 **4 (4,0) F,W,S**

Fundamentals of Probability and Statistics: PR: Four years of high school mathematics or MATH 106 or MATH 110 or equivalent. Course introducing probability and statistical inference including: estimation, hypothesis testing, binomial and normal distributions, small samples, regression and correlation.

STAT 332 **3 (3,0)**

Statistical Quality Control: Statistical concepts and methods applied to the control of quality of manufactured products. (Same as IEMS 332).

STAT 335 **3 (3,0)**

Probability and Statistics for Engineers: PR: MATH 323. Axioms of probability; combinatorial and geometrical probability; probability distributions; measures of location and dispersion; sampling and sampling distributions; estimation and tests of hypothesis; engineering applications. (Same as ENGR 371).

STAT 341 **4 (4,0) F**

Mathematical Statistics I: PR: MATH 323 and a course in statistics. Sample space, probability axioms, distribution functions, sampling distributions, interval estimation, hypothesis testing, multivariate normal, regression and correlation, linear models, analysis of variance, distribution-free methods.

STAT 342 **4 (4,0) W**

Mathematical Statistics II: PR: STAT 341. Continuation of STAT 341.

STAT 401 **4 (4,0) F**

Statistical Methods I: PR: One course in statistics or graduate standing. Statistics in research; methods of analyzing data; statistical concepts and models; estimation; tests of hypotheses; regression and correlation; analysis of variance and covariance; statistical design.

STAT 402 **4 (4,0) W**

Statistical Methods II: PR: STAT 401. A continuation of STAT 401.

STAT 411 **3 (3,0)**

Experimental Design: PR: STAT 402. Methods of constructing and analyzing designs for experimental investigations; concepts of blocking, randomization, and replication; confounding in factorial experiments; incomplete block designs.

STAT 415 **4 (4,0)**

Regression Analysis: PR: MATH 317 and STAT 401. Least squares techniques in multiple regression; matrix methods; general linear model; residual analysis; transformations; orthogonal polynomials; stepwise and stagewise procedures; non-linear estimation.

- STAT 421** **3 (3,0)**
Survey Design: PR: STAT 402. Methods of constructing and analyzing designs for survey investigations; simple random, stratified, multistage, and multiphase sampling designs; questionnaire construction; methods of estimation; techniques of survey investigation.
- STAT 477** **3 (3,0)**
Probability Theory and Applications: PR: MATH 324. Axioms of probability, discrete and continuous random variables, characteristic functions, Markov chains, recurrent events, sequences of random variables, random walk, simple stochastic processes.
- STAT 501** **3 (3,0)**
Statistical Analysis: PR: A course in statistical methods and a course in mathematical statistics. This course relates the ideas of probability and statistics, including distribution theory, to the collection and analysis of data.
- STAT 535** **3 (3,0)**
Probability for Engineers: PR: STAT 335. Engineering application of probability, combinatorial analysis, sample space, events, probability, discrete and continuous random variables, and probability distribution. (Same as IEMS 502).
- STAT 536** **3 (3,0)**
Statistics for Engineers: PR: STAT 335. Engineering application of statistics, significance tests and confidence intervals, tests of hypotheses, simple and multiple regression and correlation. (Same as IEMS 503).
- STAT 547** **3 (3,0)**
Applied Probability: PR: A course in mathematical statistics. Axioms of probability theory. Discrete random variables and probability distributions; Demoiivre-Laplace limit theorem; laws of large numbers; Markov chains; emphasis on applications.
- STAT 601** **3 (3,0)**
Multivariate Statistical Methods: PR: STAT 501. The concepts of statistical relationships among several variables and methods of estimating and testing such relationships.
- STAT 621** **3 (3,0)**
Spectral Analysis and Time Series Analysis: PR: STAT 547. Stochastic models for observations taken at discrete or continuous time points; methods of analysis for such data.
- STAT 631** **3 (3,0)**
Biostatistics: PR: STAT 501. Models and methods of analysis for the quantal response in toxicity and morbidity experiments; statistical techniques for use in bioassay, carcinogenesis experiments and sensory tests.
- STAT 647** **3 (3,0)**
Probability and Statistics: PR: STAT 547. Probability and measure theory; distributions of continuous random variables; characteristics functions; sequences and sums of random variables; the central limit problem.

T

THEATRE

- THA 180** **3 (3,0) F,S**
Study of Drama and Theatre: Nature of drama and the theatre and basic principles of play analysis.
- THA 210** **4 (4,0) W,Su**
Cinema Survey: A broad cultural approach to cinema as theatre. Satisfies Section II, Cultural and Historical Foundations, in the Environmental Studies Program.

- THA 230** **3 (3,0) F,W,S**
Interpretation I: Analysis of thought; development of imagination; oral presentation of literary forms. (Recommended for students majoring in English and preparing to teach literature. Same as SPE 230.)
- THA 240** **4 (4,0) W**
Technical Theatre Production: History, theory, and practice of technical theatre production.
- THA 241** **4 (2,4) W**
Stage Carpentry: Special approaches to construction, painting, rigging, and operation of stage scenery.
- THA 242** **4 (2,4) S**
Stage Properties: Design, construction, operation, and management of stage properties. History, style, and decoration of practical, scenic, and hand properties.
- THA 280** **4 (4,0)**
Acting I: Prepares the beginning actor for University Theatre Productions. Emphasis on movement, motivation, voice, characterizational techniques, makeup, and other basic requirements for acting.
- THA 290** **3 (0,15) F,W,S,Su**
Theatre Practicum I: PR: C.I. Open to all students interested in participating in productions of University Theatre. May be repeated for credit.
- THA 310** **4 (4,0) F**
History of the Motion Picture: Development of the film industry; its social and economic impact. (Same as COM 310).
- THA 330** **3 (3,0)**
Interpretation II: PR: THA 230 or C.I. Selecting and abridging literary material for platform use; preparation and presentation of program for special and general occasions. (Same as SPE 330).
- THA 331** **3 (3,0)**
Theater History I: Development of theatre art from the earliest times through the sixteenth century.
- THA 332** **3 (3,0)**
Theatre History II: Development of theatre art from the Renaissance through the neo-classic period to the beginning of the Romantic Period.
- THA 333** **3 (3,0)**
Theatre History III: Development of theatre art from the Romantic Period to the modern theatre.
- THA 335** **4 (4,0) W**
Stage Diction: A consideration of the role of the human voice in the art of acting: articulation, pronunciation drills, practise in vocal characterization.
- THA 336** **3 (3,0)**
Oral Interpretation III: PR: THA 230. A study of the theories and practice in the techniques of interpretation, with particular emphasis on reading for children. (Same as SPE 336).
- THA 341** **4 (4,0)**
Drama Development I: A study of dramatic works in translation of the Greeks, Roman and Medieval Theatre. Extensive readings in the plays of these periods should be expected.
- THA 342** **4 (4,0)**
Drama Development II: A study of dramatic works in translation of the 16th and 17th centuries. Continuation of THA 341.
- THA 343** **4 (4,0)**
Drama Development III: Continuation of THA 341-342 tracing the development of dramatic works in translation of the 18th and 19th centuries.

- THA 350** 4 (4,0)
Theatrical Costume: History and Theory: Historical costume for theatre purposes; period costumes in relation to social and cultural development. Fabric, silhouette, color and decoration as related to theatrical characterizations.
- THA 351** 4 (2,2)
Costume and Makeup Techniques: Analysis, design, construction, and management of costume and makeup in the theatre.
- THA 375** 4 (3,2)
Modern Stage Movement: Modern movement patterns, analysis, improvisation, and exercise to improve the flexibility and control of the actor's physical means of expression.
- THA 380** 3 (3,0)
Directing I: Fundamental principles of play-directing; demonstrations of theory in group exercises. Each student is required to direct two short scenes for laboratory presentation and criticism.
- THA 381** 4 (4,0)
Scene Design I: Study and practice of scene design; perspective drawing, fundamentals of design, and techniques of scene painting. (Service on crew as required).
- THA 382** 4 (4,0)
Stage Lighting: PR: Junior standing. Study of stage lighting techniques, practices, and equipment. (Service on light is required).
- THA 390** 3 (0,15)
Theatre Practicum II: PR: THA 290 or C.I. Primarily an activity course. Student will serve in some position of responsibility in production. May be repeated for credit.
- THA 422** 4 (4,0)
High School Play Directing: Introduction to the theory and practice of directing and producing, with particular emphasis upon methods practicable in high school and junior college play production.
- THA 423** 3 (3,0)
Contemporary Theatre and Drama: Trends in theatrical production and dramatic literature in Italy, France, Germany, Russia, and the Scandinavian countries.
- THA 424** 4 (4,0)
Principles of Motion Picture Art: PR: THA 310 or C.I. Aesthetic consideration of the motion picture as art, through the viewing of films, reading assignments, and discussion.
- THA 425** 3 (3,0)
Dramatic Criticism: PR: C.I. Analysis of the nature of past and present day criticism of the drama; practical work in such criticism.
- THA 431** 3 (3,0)
Modern Theatre Forms: Modern and historical aesthetic analysis of theatre forms; theatrical experience related to playwriting, interpretation, performance, audience response. Theorists studies: Appia, Craig, Artaud, Grotowsky and Knott.
- THA 434** 4 (4,0)
Modern Motion Picture Technique: PR: THA 310 or C.I. An examination of the techniques of motion picture as art; directing, acting, editing, writing, cinematography.
- THA 441** 4 (4,0)
Modern Currents in the Theatre: Recent trends in the development of theatre: constructs, production, and design. Study of new theatres: "Happenings," "environments," "guerrilla," "street" theatres, other departures from conventional modes.

- THA 486** **4 (4,0) W, even years**
American Theatre I: An examination of the influences on the American drama and theatre. Trends in theatrical production and dramatic types.
- THA 487** **4 (4,0) S, even years**
American Theatre II: A continuation of THA 486, with emphasis placed upon the aesthetic and literary development of the theatre in this century.
- THA 488** **3 (3,0)**
Creative Dramatics and Children's Theatre: An introduction to the bases of theatre production for and by young people. The production of children's theatre, play selection, scenery, costumes, management, and touring.
- THA 489** **4 (4,0) S**
Performance Styles: Instruction and experiences in traditional styles of acting and their application to the modern theatre.

Z

ZOOLOGY

- ZOOL 100** **4 (3,4) F,S**
General Zoology: Introduction to zoology; structure, function and representative groups; current concepts in zoological sciences.
- ZOOL 322** **4 (2,6)**
Vertebrate Histology: PR: ZOOL 100. Anatomy, structure and function of major cell types and tissues.
- ZOOL 324** **5 (3,4) F,W**
Human Anatomy: PR: BIOL 110 or equivalent. Structure of the human body. Not open to students in ZOOL 326, ZOOL 327 or equivalent.
- ZOOL 326** **4 (2,6) F**
Comparative Vertebrate Anatomy I: PR: ZOOL 100. The vertebrate animals; relationship of organs and systems; and their phylogenetic significance.
- ZOOL 327** **4 (2,6) W**
Comparative Vertebrate Anatomy II: PR: ZOOL 326. Continuation of ZOOL 326.
- ZOOL 334** **5 (4,3) W,S**
Human Physiology: PR: BIOL 110 or equivalent. The physiology and inter-relationships of organ systems of the human body.
- ZOOL 340** **4 (2,6) S, odd years**
Vertebrate Zoology: PR: 8 hours of zoology or C.I. Emphasis on evolution and classification followed by an introduction to vertebrate ecology, natural history and behavior.
- ZOOL 370** **5 (3,6)**
Animal Parasitology: PR: ZOOL 100. Identification and life histories of representative parasitic protozoa and helminths emphasizing host-parasite relationships; techniques of animal examination.
- ZOOL 423** **5 (3,6) S, even years**
Embryology: PR: 12 hours of biology. Embryology of the vertebrates; fertilization of egg; stages of cleavage; development of organs and systems.
- ZOOL 430** **5 (4,3) F, even years**
Animal Physiology: PR: Biol 332 or C.I. Functions of body processes occurring in animals with emphasis on vertebrate physiology.
- ZOOL 442** **5 (3,6) W**
Invertebrate Zoology: PR: 12 hours of biology or C.I. Taxonomy, anatomy and ecology of the invertebrate animals.

- ZOOL 443** 4 (3,3)
General Entomology: PR: ZOOL 100. Introduction to insects; their identification, biology and ecology.
- ZOOL 445** 4 (2,6) S, even years
Ichthyology: PR: 8 hours of zoology or C.I. Introduction to the biology of the fishes, their classification, evolution and life histories.
- ZOOL 453** 3 (3,0) W, even years
Zoogeography: PR: BIOL 350 or C.I. Principles and concepts concerning regional patterns of distribution of the animals of the world, both past and present.
- ZOOL 475** 4 (3,3)
Vertebrate Ethology: PR: ZOOL 100. Classical ethology, modern experimental ethology and behavioral ecology are considered.
- ZOOL 537** 3 (3,3)
Endocrinology: PR: ZOOL 330 and CHEM 441 or C.I. Mechanisms of action of hormones; interrelationships between the nervous and endocrine systems.
- ZOOL 544** 4 (2,6)
Ornithology: PR: 8 hours of zoology or C.I. Introduction to the biology of birds, their classification, evolution and life histories.
- ZOOL 546** 4 (2,6)
Herpetology: PR: 8 hours of zoology or C.I. Introduction to the biology of the amphibians and reptiles, their classification, evolution and life histories.
- ZOOL 548** 4 (2,6)
Mammalogy: PR: 8 hours of zoology or C.I. Introduction to the biology of mammals, their classification, evolution and life histories.
- ZOOL 558** 4 (2,6)
Fishery Biology: PR: BIOL 450 and ZOOL 445. The biology and management of important commercial and game fishes; case histories of selected fisheries and analysis of methodology.
- ZOOL 572** 3 (3,0)
Principles of Zoological Systematics: PR: BIOL 460 and 15 hours of zoology courses of 300 level or above. Theory and practice of taxonomy and classification of animals; introduction to the international Code of Zoological Nomenclature.
- ZOOL 576** 5 (3,6)
Aquatic Invertebrates: PR: ZOOL 442 or C.I. A faunistic survey of major invertebrate groups associated with aquatic environments in Florida.
- ZOOL 647** 4 (2,6) S, odd years
Field Zoology: PR: 12 hours in biological sciences, or science teaching experience or C.I. Classification and identification among major animal groups with emphasis on field experience. Major references sources reviewed.

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- OLSON, ARTHUR H.**
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Assistant Professor of Education
- OLSON, JUDITH L.**
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Visiting Professor of Art
- OSBORNE, JOHN A.**
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Professor Emeritus of English

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December, 1969

Kurt H. Debus, Doctor of Engineering Sciences

December, 1969

William H. Dial, Doctor of Commercial Science

June, 1970

John W. Young, Doctor of Applied Science

March, 1973

Louis C. Murray, Doctor of Public Service

COURTESY APPOINTMENTS

BRADFORD, WILLIAM S., B.S., M.D. (University of North Carolina)

Clinical Professor of Allied Health Sciences
Anesthesiologist, Orange Memorial Hospital, Orlando

CALABRESE, ANTHONY S., B.S., M.D. (Northwestern University)

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Radiologist, Holiday Hospital, Orlando

CAPRAUN, LYNN W., ARRT, B.S., (Florida Technological University)

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Director, Respiratory Therapy Program, Valencia Community College, Orlando

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Clinical Professor of Allied Health Sciences
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INDEX

AA Degree	47
Academic	
Affairs	4
Calendar	11-15
Load—Graduate	61-62
Policies	35
Probation	54
Staff	327
Standing	52
Terms and Actions—	
Defined	52, 53, 54
Warning	54
Accountancy	69, 78, 196
Accreditation	
General	19
College of Business Administration ..	19
Education	19
Engineering	19
Natural Science	19
Add/Drop Policy	52
Administration	
FTU	4, 5
Policies	35
Public	182, 306
Public Service	179
Admissions	
Undergraduate	35
Early Admission	42
Graduate	46, 58
Admissions and Standards	
Committee	37, 54
Adult Education	18, 38
Advanced Placement Program	43
Advisement	23, 29
Aerospace	170, 197
Air Force (See Aerospace)	170
Allied Health Sciences	141, 198
Allied Legal Service	179, 278
American Council on Education	36
Anatomy, Human (ZOOL)	325
Anthropology—Sociology	315
Appeal	54
Applicant	
Freshman and Transfer	35
Graduate	62
Application for Admission Deadline ..	37
Readmission	37
Application for Degree	
Baccalaureate	56
Graduate	62
Deadline	56
Art	123, 199
Associate in Arts Degree	47
Astronomy—Physics	295
Athletics, Campus	31
Auditors	38
Audit Students	38
Average	
FTU	54
Overall	54
Quarter	54
Bachelors (or Baccalaureate) Degree ..	46
Biological Sciences	146
Biology	146, 202
Biology of Fishes (ZOOL)	
Ichthyology	326
Board of Education—State of Florida ..	3
Board of Regents—State of Florida ..	3
Bookstore	22
Broadcasting (RTV)	175-307
Bryology (See BOT 542)	205
Budgets, Estimated College	26
Business Administration,	
College of	68
Common Body of Knowledge	68
Specializations in	
Accountancy	69
Business Administration	70
Economics	71
Finance	72
Management	73
Marketing	74
Graduate Program	
Accountancy	78
Admission to	75
Business Administration	76
Economics	79
Management	80
Botany	148, 204
Business Administration	
Courses	205
Department of	70
Business Education	89, 225
Calendar	11-15
Campus	
Athletics	31
Guide	6, 7
Map	9
Catalog—Graduation Requirements ..	46
Centers, Resident	17
Ceramics (ART)	201
Certification for	
Teaching—Education	49, 83
Checks, Personal	33
Chemistry	95, 149, 206
Child Care Center	30
Civil Engineering	108, 209
Civilistics—Forensic Science	150
Classification by Quarter Hours	52
Classroom Responsibility	32
Collage America	356
College Level Examination	
Program (CLEP)	
FTU Policy	42-45
Colleges:	
Business Administration	67
Education	81
Engineering	104
Humanities and Fine Arts	121
Natural Sciences	138
Social Sciences	169
Communication	173, 212
Communication/Sciences—	
Engineering	109, 245
Communicative Disorders	174
Computer Science	153
COMP	217
EMCS 431	250
EECS 414	245
IEMS 432	273
Concurrent Enrollment	38
Conduct	32
Contents, Table of	2
Continuing Education	18, 38
Continuous Attendance	46
Cooperative Education—	
Co-op Program	18
Core—Engineering	107
Corequisite (CR)	194
Costs	26, 33
Course Classification	194
Course Descriptions	196
Course Load—Graduates	61
Course Substitution	42
Courtesy Appointments	347
Credit	
By Examination	42, 43
Recency of Work	62
Criminal Justice	180, 221
Criminalistics—Forensic Science ..	150
Cum Laude	51

D—Grades	36, 42
Deadline	
Applications	37
Records	37
Also, see calendar	11-15
Dean of Men and Dean of Women	30
Deans' List	51
Degrees Offered	47
Degree Requirements	
University, General	46
General Studies Program	64
College of Business Administration	68
College of Education	82
College of Engineering	105
College of Humanities & Fine Arts	122
College of Natural Sciences	139
College of Social Sciences	170
Developmental Center Services	29
Disqualification	54
Doctoral Program	49
Double Major	56
Drop Policy	52, 55
Dual Enrollment	38, 42
Early Admissions Program	42
Early Childhood Education	85
East Central Florida Area	16
Ecology	
Fresh Water	203
Population	317
Economics	71, 79, 176, 222
Education, College of	81
Administration Courses	225
Certification for Teaching	83
Doctoral Programs	102
Elementary	84, 85, 227
Exceptional Child	85, 230
Graduate Programs	101, 102
Library Science	233
Physical Education	86
Professional Lab. Exp.	87, 237
Secondary—Specialization	88, 238
Biology	94
Business Ed.	89, 225
Chemistry	95
English	92
Foreign Languages	92
Mathematics	93
Music Ed.	234
Physics	96, 235
Social Sciences	97
Speech	97
Technical/Vocational	98
Teaching Analysis	99, 241
K-12/Library Media Specialist	100
Visual Arts	100, 243, 244
Elementary Engineering	109, 245
Elementary Education	84, 227
Employment Opportunities	28
Engineering, College of	104
Admission to	105
BSE Program	108
Civil Engr. & Envr. Sci.	108, 209
Degree Requirements	106
Doctoral Programs	120
Elect. Engr. & Comm. Sci.	109, 245
Engr. Core	107
Engr. Math & Comp. Sci.	110, 250
Engr. Technology	113, 254
Graduate Programs	117
Ind. Engr. & Mgmt. Sys.	111, 273
Interdisciplinary	249
Mech. Engr. & Aerospace Sci.	112, 286
Engineering Mechanics & Material Sciences (EMMS)	252
English	92, 125, 137, 256
Entrance Requirements	35

Environmental Sciences—	
Engineering	108, 209
Environmental Studies	
Basic	63
Advanced	64
Engineering—Interdisciplinary	249
Physical Education	261
Ethnobotany (see BOT 371)	204
Examination (see Tests)	
Exceptional Child Education	85, 230
Exclusion	54
Expenses	26, 33
Extramurals	31
Faculty	327
Fees	33
Film	136, 322
Finance	72, 263
Financial Aid	24-28
Florida Resident—Defined	40
Florida State-Wide Twelfth Grade Test	35
Food Services	23
Foreign Languages	92, 127, 264
French	264
German	267
Italian	276
Russian	313
Spanish	318
Forensic Science—Chemistry Dept.	150, 264
Forgiveness Policy	51, 52
Foundation, FTU	19
FTU Average—Defined	54
French (FRE)	92, 127, 264
Fresh Water Ecology	203
Full-Time Student	23, 41, 53
General Education Requirements Certification	55
General Equivalency Diploma (GED)	35
General Studies	64-66
Geography	
Physical	266
Plant (See BOT 453)	205
Social	266
Geology	266
German (GER)	267
Grade Point Average	50, 54
Grading System	50
Graduate Programs	
Accountancy	76
Administration/Supervision	102
Biological Science	164
Business Administration	76
Clinical Psychology	189
Communication	188
Comprehensive K-12—Education	102
Computer Science	166
Economics	79
Education	101
Engineering	117
English	137
Environmental Systems Management	120
Guidance	102
Industrial Chemistry	165
Industrial Psychology	190
Management	80
Mathematical Science	167
Public Policy	192
School Psychology	191
Graduate Record Examination (GRE)	59
Graduate Studies	58
Admission to	58
Regular Status	58
Graduate Process, Steps in Degree Requirements— University	46, 58

Requirements—Catalog Choice	46
Responsibility	57
Grants	27
Guidance (EDGU)	102, 232

Health

Record	40
Services	24
Education	87
Herpetology (ZOOL)	326
High School Equivalency Diploma	35
History	97, 128, 268
Honorary Degrees	347
Honors	51
Hours	
Coding for Course Description	195
Quarter	50
Housing Policy	23
Humanities	122, 129, 272
Humanities & Fine Arts, College of	121
Art	123, 199
Ceramics	201
English	125, 256
Fine Arts	124
Foreign Language	127
French	128, 264
German	267
Italian	276
Russian	313
Spanish	128, 318
Graduate Program	137
History	128, 268
Humanities	130, 272
HFA—Administration Program	122
Music	132, 292
Philosophy	129, 131, 294
Pre-Law	122
Religion	129, 310
Theatre	134, 322

Ichthyology (ZOOL)	326
Incomplete Grade	50
Independent Study	62
Industrial	
Chemistry	165
Engineering	111, 373
Psychology	190
Information	6
Institutional Purpose	16
Intercollegiate Sports	32
International Students	39
Services	23
Intramural Sports	31
Italian (ITA)	276

Journalism	92, 174, 188, 276
Junior College Transfers	36

Kindergarten Education	84, 85
------------------------	--------

Language Courses

English	256
Foreign	264
French	264
German	267
Italian	276
Russian	313
Spanish	318
Language Placement	127
Language Specialization—	
Education	92
Language Studies—	
Humanities	127, 128
Late Fees	33

Law Enforcement

See Criminal Justice	180, 221
Legal Services, Allied	179, 278
Libraries	19-22
Courses	233
Media Spec.—Education	100
Services	21
Literature Courses	256
Loans, Student	26

Magna Cum Laude	51
Mammalogy (ZOOL)	326
Management	73, 80, 111, 273, 279
Maps	
Campus	9
Orlando area	8
Marketing	74, 281
Materials Sciences—	
Engineering	112, 252
Mathematical Sciences	93, 152, 155, 282
Maximum Hours— BOR	61
Mechanical Engineering	112, 286
Medical History Report	40
Medical Record Administration	142
Medical Technology	143
Microbiology (MICR)	148, 291
Music (MUS)	132, 292

Natural Sciences, College of	138
Allied Health Sciences (AHS)	141, 198
Medical Record	
Admin. (MRA)	142, 289
Medical Technology (MEDT)	142, 143, 290
Radiologic Technology (RTE)	142, 145, 309
Respiratory Therapy (RTH)	142, 145, 312
Biological Sciences	146
Biology (BIOL)	146, 202
Botany (BOT)	148, 204
Fresh Water Ecology	148, 203
Microbiology (MICR)	148, 291
Zoology (ZOOL)	148, 325
Chemistry (CHEM)	149, 206
Forensic Science (FSC)	150, 264
Mathematical Sciences	152
Computer Science (COMP)	153, 217
Mathematics (MATH)	155, 282
Statistics (STAT)	156, 321
Physics (PHYS)	157, 295
Preprofessional	158
Predental	159
Premedical	161
Preoptometry	162
Prepharmacy	162
Preveterinary	159
Non-Credit Activities	18
Non-Degree Student	39
Non-Florida Students	28, 40
Nursery—Early Childhood Education	84

Off-Campus Courses	17, 18, 38
Orientation	23
Orlando Vicinity Map	8
Ornithology (ZOOL)	326
Out-of-State Students	33
Overall Average—Defined	54

Past Due Accounts	34
Petition for Substitution of Course	42
Philosophy	129, 294
FTU Statement of	16
Photography (ART)	201
Physical Education	
(EDPE, ESPE)	86, 235, 261

Physics (PHYS)	96, 157, 295
Physiology (ZOOL)	
Animal	325
Human	325
Placement Center	28
Policies, Academic and Admin.	35
Political Science (PCL)	176, 297
Population Ecology	317
Post Baccalaureate Status	59
Predental	159
Pre-Law	
College of Humanities &	
Fine Arts	122
College of Social Sciences	178
Premedical	161
Preoptometry	162
Prepharmacy	162
Preprofessional Programs	158
Prerequisite (PR)	194
Preveterinary	159
Probation, Academic	54
Professional Laboratory (EDPL) ..	87, 237
Provisional Admissions	59
Psychology (PSY)	183, 189-192, 302
Public Administration (PAD)	182, 306
Public Policy, Master of	192
Public Service Administration	179
Allied Legal Services (LES) ...	179, 278
Criminal Justice (CRJ)	180, 221
Public Administration (PAD) ...	182, 306
Purpose, Statement of	16
Quantitative Business	
Analysis (QBA)	307
Quarter Average—Defined	54
Quarter Hours—Explained	50
Radio-Television	175, 307
Radiologic Technology	142
Readmission	37
Real Estate	263
Records	
Deadline	37
Validity of Documents	37
Refund of Fees	34
Registration Dates (see calendar) ..	11-15
Registration Fees	33
Religion (REL)	129, 310
Repeat Policy	51
Resident Centers	17
Residence Requirement	
Graduate	62
Undergraduate	46
Residency—Defined	40, 41, 62
Respiratory Therapy	142
Responsibility for Meeting	
Graduation Requirements	57
Russian	
Area Studies	128, 178
Language (RUS)	313
Schedule Changes	52
Scholarships	27
Scholastic Aptitude Test (SAT)	35
Sculpture Course (ART)	201
Seal—FTU	1
Second Degree	
Bachelor's	56, 57
Graduate	60
Secondary Education	88
Senior Seminars	
BADM	206
EDTA	242
HFA	272
Service School Credits	36
Social Science Spec. (EDUC)	97
Social Sciences, College of	170

Aerospace Studies	170, 197
Allied Legal Services (LES) ...	179, 278
Communication	173, 188, 212
Communicative Disorders	174
Film	174
Journalism (JRN)	174
Radio, T.V. (RTV)	175
Speech Communication	175
Criminal Justice (CRJ)	180, 221
Economics (ECON)	176, 222
Political Science (PCL)	176, 297
Psychology (PSY) ...	183, 189-192, 302
Public Policy	192
Public Service Administration	179
Allied Legal Service	179, 278
Criminal Justice	180, 221
Public Administration	
(PAD)	182, 306
Social Sciences	187
Sociology (SOC)	184, 314
Anthropology (SOC)	185, 315
Social Work Specialization	186
Sociology (SOC)	184, 314
Spanish (SPA)	128, 318
Special Student	53
Speech	
Certification in Educ.	97
Communicative Disorders	174
Courses	320
Speech Communication	175
Sports	31
Statement of Philosophy	16
Statistics (STAT)	156, 321
Steps in the Graduation Process	56
Student	
Affairs	5, 23
Activities	29
Assistance Programs	24-28
Audit	38
Budget	26
Classification	52
Conduct	32
Co-op	18, 53
Counseling	29
Employment	28
Expenses, Estimated	26
Fees	33
Financial Aid	24, 26
Government	30
Grants	27
Health Record	40
Health Services	24
Housing	23
International	23, 39
Loans	26
Non-Degree	39
Orientation	23
Placement Center	28
Responsibility	32
Scholarships	27
Special Student	38, 53
Sports Program	31
Temporary	38, 53
Transient	38
Village Center	31
Work-Study Program	28
Substitution of Courses	42
Summa Cum Laude	51
Table of Contents	2
Teacher	
Career Programs	83
Certification	83
Teaching Analysis (EDTA)	99, 241
Technical/Vocational	
Education (EDVE)	98, 244
Technology, Engineering	
(ENT)	113, 254
Television	175, 307

Temporary Student	38	Transient Student	38
Tests		Traveling Scholar Program	60
ACT (Amer. College Test)	35	Tuition	33
ATGSB (Admis. Test for Grad.			
Study in Bus.)	58, 59, 60	Unaccredited	
CLEP (Col. Level Exam. Prog.) ..	42-45	Colleges, Transfers from	36
CQT (Col. Qualification Test)	35	High Schools, Transfers from	35
FTG (Fla. State Wide 12th		Undergraduate Degree Requirements ..	46
Grade Test)	35	University Bookstore	22
GED (Gen. Educ. Dev. Test)	35		
GRE (Graduate Record Exam.)	59	Vehicle Registration	7, 33
SAT (Scholastic Apt. Test)	35	Veterans' Affairs	30, 53
TOEFL (Test of Eng. as a		Village Center	31
Foreign Lang.)	39	Visual Arts (EDVA)	100, 243
GMAT (Graduate Mgmt. Adm.		Vocational Educ. (EDVE)	98, 244
Test)	59		
Credit by Examination	42, 43	Warning, Academic	54
Theatre (THA)	134, 322	Where To Go For Answers	6, 7
Thesis	62	Withdrawal Policy	55
Time-Shortened Degree			
Opportunities	42	Zoology (ZOOL)	148, 325
Transfer			
Applicant	35		
Credits	35, 36, 60		
"D" Grades	36, 42		

COLLAGE AMERICA

by Dolores Vickers
Winnie Richmond
Julie Johnson

The United States was conceived and grew as a result of ideas, so too did this wall hanging. Jonathan Locke articulated democratic concepts and ideas, Franklin spoke and printed those ideas, but Tom Payne in "Common Sense" preceded them both, by being the first to print the concept of revolt. In a similar manner, Collage America became what you now see. Julie said, "Let's do a Bicentennial quilt." Dolores studied not only history but the method of articulation of the historical facts, and Winnie synthesized the idea and the research into a cohesive direction. Thus, the three individuals, as they began to develop their story, became a miniscule reflection of the thousands of people who came together to work, discourse, explore and subsequently build the United States.

What one perceives here, is not merely a reflection of our 200 years as a country, it is a part of that very 200 years. America is overwhelming, as we gaze into our rearview mirror of its history, so too one is overwhelmed at first glimpse of this fabric mosaic.

Each event in our past as a nation is vital to the understanding of what we conceive of as the United States of America. The beauty of quilts is not only dependent upon their separate patches and blocks, but even more so on design. This contemporary portrait of America has synthesized the pattern of history and the design of quilting in an exploratory, yet thoughtful spirit. It is this very subtle integration of sequence, design and exploration which is the substance, emotion and message of this unique wall hanging. This message is at once powerful — larger than life; yet private, individual and personal. It seems to exert a magnetic influence on all who see it, as if it reaches out and includes the viewer's own experience and background.

The wall hanging is divided both sequentially and topically. The time sequence begins in the optical center with the Declaration of Independence (1776), and continues outward in all directions until reaching the borders where current events are depicted (1976).

The topical themes begin at the top with migration, then progress clockwise to economics and politics in the upper right segment. Invention and technology complete the right side. The historical episodes of war are located in the lower section, followed clockwise by human and civil rights. The remaining upper left area depicts national expansion and growth, including America's efforts toward world peace.



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